

Nematode Survey Covers 25 States

**Pest Established
On 15,626 Acres**

WASHINGTON — About three-quarters of a million acres in 25 eastern and central states were surveyed during 1957 in a search for the soybean cyst nematode, the U.S. Department of Agriculture reports. This new pest of soybeans has now been found on 15,626 acres in six states—Arkansas, Kentucky, Mississippi, Missouri, North Carolina and Tennessee.

USDA pest-control workers declare it fortunate that this root-feeding nematode has not yet been found in the chief soybean-producing areas of the U.S. The surveys show that the nematode is established in three main areas.

The largest is a narrow 11-county strip straddling the Mississippi River and extending from southwestern Kentucky to northwestern Mississippi. Counties included in the area are: Crittenden and Mississippi in Arkansas; Fulton in Kentucky; DeSoto in Mississippi; Pemiscot, New Madrid and Stoddard in Missouri; and Dyer, Lake, Lauderdale and Obion in Tennessee.

The other two main infested areas are in North Carolina. One includes New Hanover and Pender counties along the southeastern coastline. The other is more than 200 miles north-eastward, in Camden County on the state's northern border.

State agriculturists in cooperation with workers in USDA's Agricultural Research Service made the 1957 nematode survey. It covered parts of 25

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Diamond Alkali Sells Black Leaf House, Garden Line

CLEVELAND — Sale of the house and garden line of insecticides and lawn chemicals of Diamond Black Leaf Products, a unit of Diamond Alkali Co., Cleveland, to a newly-formed Illinois corporation, Black Leaf Products Co., was announced here recently by Raymond F. Evans, chairman and president of Diamond.

The new firm, organized by a group headed by A. K. Paul and presently establishing operations in the Chicago area, has purchased Diamond Black Leaf's house and garden line inventory and assets, including raw materials, formulated products, packaging and promotion materials, and

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California Speakers Describe Ten Years' Herbicide Progress

SAN JOSE, CAL. — A review of weed control progress in the U.S. during the past decade; how this progress has aided agriculture; and the important role of herbicides in highway maintenance, were among the topics discussed by speakers at the 10th annual California Weed Conference here Jan. 22. Papers were presented by representatives of companies making herbicides and by college and experiment station personnel.

Jack Dreessen, herbicide specialist

for the National Agricultural Chemicals Assn., Washington, D.C., described the important role of weed killers in the maintenance of highways across the nation. Speaking on "Roadside Brush and Weed Control on a National Basis," Mr. Dreessen said the great strides in chemical weed control in the past 20 years have made possible such effective roadside maintenance, that maintenance dollars do almost double duty when chemicals are made a part of the highway maintenance program.

In reviewing the current road maintenance situation throughout the country, the NAC Assn. representative reported that more than 60,000 miles of roadside were sprayed one or more times last year with herbicides. With over a million dollars spent, chemical weed and brush killers were used with spectacular results in at least 35 states for roadside maintenance, he said.

Mr. Dreessen forecast a substantial increase in the use of herbicides for highway maintenance in the years ahead. He said that the expanded use of herbicides will result in safer, more attractive roads and this can be accomplished while maintenance costs are being reduced.

Speaking on how revolutionary discoveries in weed control research in the past decade have helped farmers produce much greater crop yields, R. H. Beatty, director of research, agri-

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WASHINGTON WIRE

Stand-Still Attitude is Seen in Senate Committee

By JOHN CIPPERLY, Croplife Washington Correspondent

WASHINGTON — Outwardly, the Senate agriculture committee which probably will dominate any farm legislation enacted this year, is veering to the old practice of "stand-still" legislation which for so many years retained the old Steagall amendment of rigid high price supports in effect. The Steagall amendment, designed by its sponsors in 1942 in an amendment to the price control law, proposed that farmers

should be protected against radical price declines after the war if they supported the government's request for all out production.

When the war ended, the high price support crowd saw in the Steagall amendment a cost attraction for the farm vote and they consistently retained the principles of the Steagall amendment although they gave ground reluctantly in minor concessions.

Now as the Benson program of lowered price supports and an end to the flexible sliding scale adjustment of supports face this Congress, the recalcitrant national legislature politicians are fighting a rearguard action in which they now hope to effect the old "stand-still" type of legislation this year which would halt any administrative changes in the level of support as previously announced or contemplated by Secretary Benson to not less than 1957 levels.

This means lowering the level of price support for wheat from \$2 bu. last year to \$1.78 for the new crop. They are joined by the dairy interests in certain areas who want the price support for dairy products retained at approximately 82.5% of parity.

There is a strong drive on in the Senate side of Congress to draw into this coalition other major crop interests for what can only be described as a "stand-still" in farm price supports as the high price support advocates urge another year of contemplation of the farm problem.

It is believed such a measure can pass the Senate and possibly the House, but there is strong reason to believe that Secretary Benson has the firm backing of President Eisenhower and that if Congress

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1957 Pesticide Carryover Similar to '56

WASHINGTON — Carryover stocks of important pesticides as of Sept. 30, 1957, averaged about as large as on the same date a year earlier, the U.S. Department of Agriculture has reported.

USDA's annual survey, conducted in cooperation with the National Agricultural Chemicals Assn., indicates that as compared with 1956, shorter stocks of DDT, lead arsenate, and copper fungicides were more than offset by larger carryovers of 2,4-D, 2,4,5-T, and calcium arsenate. Benzene hexachloride stocks were about the same size. Inventories of newer phosphorus insecticides, such as malathion and methyl parathion, showed some increase.

Fumigants are in larger supply than in 1956. They have not been included, however, in calculating the ratio of 1957 stocks to 1956 carryover.

The 1957 pesticide report is based upon data furnished by 165 major manufacturers of agricultural chemicals.

MANUFACTURERS' STOCKS OF PESTICIDES, SEPT. 30, 1957

Material—	All stocks reported as of Sept. 30, 1957 (1,000 lb.)	Percentage reported used in mixtures	1957 stocks as a percentage of 1956 stocks
Aldrin, chlordane, dieldrin, endrin, heptachlor, toxaphene	32,477	19.3	108
Benzene hexachloride, including lindane (gross basis)	21,220
Benzene hexachloride (gamma basis)	5,916	36.0	103
Calcium arsenate	8,259	15.3	168
Copper fungicides	9,328	7.6	80
2,4-D (acid basis)	17,368	40.9	177
DDT	24,252	36.3	77
Fumigants, grain and soil	49,636
Lead arsenate	3,101	25.0	65
Mellicides, miscellaneous	1,317	58.3	85
Organic phosphorus compounds	...	54.3	128
Sulfur, ground	30,282	53.6	87
2,4,5-T (acid basis)	4,327	40.4	307
Other fungicides	9,576	31.1	92
Other insecticides	9,191	42.4	130
Other weed killers	16,103	47.8	109
Miscellaneous, including rodenticides	3,400
Total	252,000	38.6	103

*Based on incomplete data. **Incomplete.

Industry Three-year Building Program To Total \$210 Million

WASHINGTON — Domestic construction of new fertilizer production facilities in the 1957-59 three-year period will total \$210,875,000, according to estimates released recently by the Manufacturing Chemists Assn.

MCA said that this figure was broken down as follows: \$114,800,000 in already completed projects, \$50,500,000 under construction and \$45,575,000 planned.

During the same three-year period the estimated total for domestic construction of new chemical production facilities was \$3.84 billion, according to MCA.

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Col. Thomas C. Compton

Thomas C. Compton Joins Best Fertilizers

OAKLAND, CAL.—Lowell W. Berry, president of the Best Fertilizers Co., has announced the appointment of Col. Thomas C. Compton as his executive assistant. Col. Compton retired from the Army last Dec. 31 after more than 20 years' service.

In his capacity with Best Fertilizers Co., Col. Compton will initially be located at the Oakland office. A move to the Lathrop, Cal., plant and office is planned for later this year.

Disease Cut Into 1957 Cantaloupe Crop

TUCSON, ARIZ.—Crown blight and a new virus complex played havoc with Arizona's 1957 cantaloupe crop. The 1956 average of 130 crates per acre was cut down to 111 crates last season.

This was due to the familiar pest, crown blight, and a new virus, reports Ivan J. Shields, extension plant pathologist for the University of Arizona. When vines stopped growing and runner tips turned yellow, growers thought of crown blight, but close examination showed the cause to be three viruses at work.

Since more research is necessary to formulate control measures, growers are urged to plant on several different dates instead of the total acreage at once. This, according to Mr. Shields, may keep the producers from losing an entire planting to the "new" viruses.

Soil fumigation, fertilizer trials, soil amendments, irrigation levels, insect controls, and root rotting organisms are all being investigated by a team of scientists.

Illinois Fertilizer Industry Conference Hears Results of Latest Soil Research Work

URBANA, ILL.—The 1958 Illinois Fertilizer Industry Conference attracted 200 industry representatives to the University of Illinois at Urbana Jan. 21-22. M. B. Russell, head of the department of agronomy, opened the conference by citing the need for understanding between soil science research workers and the fertilizer industry. He invited the suggestions of this group on needed educational, research or extension programs in soil fertility and management.

S. R. Aldrich, professor of soils extension, reported the tremendous growth in plant food sales in Illinois since 1930. Mixed fertilizer sales have jumped from 33,000 tons to almost 533,000 during this period. Fertilizer materials have sky-rocketed from 9,000 tons to 301,000. Rock phosphate sales have climbed from 37,000 tons to 624,000 tons.

Mr. Aldrich pointed out that Illinois ranks near the top among midwestern states as a market for plant foods. For 1955 he reported that Illinois farmers bought 73,000 tons of nitrogen, second only to Indiana with nearly 79,000 tons. For all forms of phosphates, Illinois ranked first, far ahead of Indiana with 170,000 tons. In potash sales, Illinois farmers bought almost 131,000 tons, ranking behind Indiana and Ohio but ahead of Wisconsin, Missouri and Iowa.

Joseph Vavra, soil chemist at Southern Illinois University, reported on deep tillage and deep fertilizer placement research underway in southern Illinois. When researchers mixed soil at depths of 9, 18, 27 and 36 inches, they were not able to increase water holding capacity.

Corn yields were doubled compared with no treatment when fertilizer was applied according to tests for the full 36 inch depth. But corn yields were not increased significantly when more than the normal fertility treatment was applied to the top 9 inches of soil. Heavier applications resulted in injury from high salt concentration.

Lloyd J. McKenzie, Illinois soils extension specialist, described the new productive potential guides developed for Illinois soils. He pointed out that these guides are aimed to help farmers work out the most efficient production on the type of soils they have. With top management, many soils can produce more than they are now yielding. On the other

hand, some soils have more limited potential and even with the best management, they will not produce as much.

F. J. Stevenson, University of Illinois, soil biologist, discussed soil reaction with fertilizers containing ammonium. He said that the main reaction of ammonium in soils is simple absorption on clay minerals. This is followed by mineralization or conversion to nitrates and subsequent uptake by plants. However, in some soils ammonium becomes fixed by clay minerals. On soils with high ammonium fixing capacity where both potash and ammonium fertilizers are being applied, it may be desirable to add the potash before the nitrogen, Mr. Stevenson said.

E. H. Tyner, professor of soil fertility, said that latest research showed ammonia forms of nitrogen superior to nitrate forms for fall applications. Tests at Urbana included nitrate, ammonium and urea nitrogen forms. The plots were watered during the winter and spring at 3 different rates from 13.4 to 26.7 inches to represent varying winter moisture conditions.

To find out how much nitrogen was left in the soil, researchers planted Sudan grass in May. This crop was harvested and analyzed to determine how much nitrogen the crop had removed under each treatment. During the first year of study, they found little difference in various forms of nitrogen carriers. Last year the nitrate fertilized plots seemed to lose far more nitrogen. All the heavily watered plots contained less nitrogen, showing that nitrogen was lost under high moisture conditions.

S. W. Melsted, University of Illinois soil chemist, reported that Illinois has not yet recommended a soil test for nitrogen. He stressed that the University of Illinois agronomy department is continuing research on nitrogen chemistry.

Concluding the afternoon program, E. H. Tyner, M. B. Russell and R. H. Bray discussed current interest areas of phosphorus.

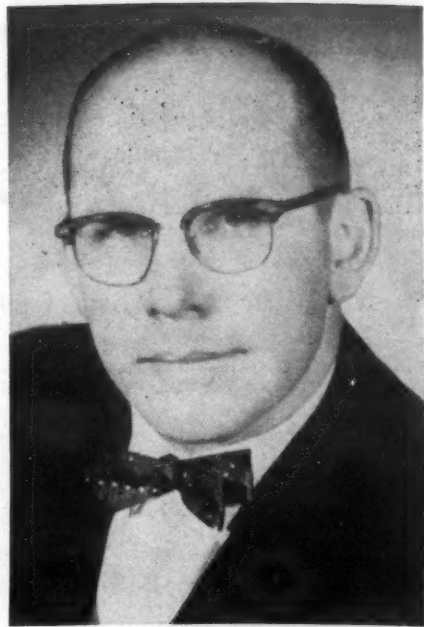
Mr. Tyner said that when soils are low in phosphorus, farmers will receive a better response from band application of the more water soluble forms of phosphate fertilizers on corn and small grains. He also said that on soils with a pH of 7.5 to 8 a higher level of water soluble phosphorus is recommended.

When applying phosphate fertilizer broadcast on acid to neutral soil low in available phosphorus, water solubility of the phosphorus becomes less important, Mr. Tyner said.

M. B. Russell explained that the college of agriculture served as an advisor to the state Agricultural Stabilization and Conservation Committee on use of phosphate fertilizers under the ACP program. He reported that the agronomy department had recommended payments for use of either rock phosphate or superphosphate for establishing legumes and grasses.

R. H. Bray emphasized that phosphorus soil tests are accurate, but they won't overcome the effects of bad sampling or bad application. He explained that there are two forms of phosphorus that are measured by soil tests. The P-1 test measures only the absorbed form—as found in superphosphate. The P-2 test measures both the absorbed form and the acid soluble form as found in rock phosphate. Mr. Bray said that both forms of phosphate have a use in the soil but the absorbed form is more readily available to plants.

During the evening session, Z. H. Beers, midwest manager for the National Plant Food Institute, an-



Kenneth L. Schulz

VELSICOL REPRESENTATIVE—Kenneth L. Schulz has been appointed technical sales representative for Indiana and Illinois by Velsicol Chemical Corp., Chicago. Mr. Schulz has joined the agricultural chemicals division and will be responsible for sales of the company's line of insecticides and solvents in his territory. He will headquarter in Lincoln, Ill. Mr. Schulz has an extensive background in agriculture, having graduated from the University of Minnesota with a major in agronomy and later serving as a fieldman for the Green Giant Canning Co. Later, he was assistant sales manager for Pfister Associated Growers, and was active in sales promotion work through the Northern and Eastern regions of the corn belt. He then became sales manager of Fuller Seed Co., Lincoln, Ill., a grower unit of Pfister, before joining Velsicol.

nounced that wall charts showing the potential productivity of Illinois soils would be available to all institute members at cost by February.

Mr. Beers also reported on the National Plant Food Institute Survey of farmers' attitudes toward fertilizers. In the North Central Region, 645 farmers were surveyed. Mr. Beers reported that farmers were generally pessimistic. With the feeling they had no control over the weather, prices and government programs, many believed the future was not bright. He stressed that the survey shows farmers need encouragement so they will develop more favorable attitudes toward change. They need to be encouraged to make changes that will make improvements in their business possible.

J. H. Bigger, entomologist with the Illinois Natural History Survey, reported that farmers will benefit from using either aldrin or heptachlor mixed with their fertilizers. He reported that their research shows a 6.8% increase in plant population when the fertilizer-insecticide mixture was broadcast and a 4.6% increase when the row treatment was used in the recommended amount. Unfortunately the most favorable placement for fertilizer, about 2 inches to the side and 1½ inches below the seed, is not the best placement for the insecticide, he said.

J. B. Hanson, University of Illinois plant physiologist, reported that chloride is an essential minor element for plant growth, but most of it will be supplied in the normal rainfall so there's no danger we will run short.

S. W. Melsted explained the calibration of the potassium soil test. He pointed out that the test really shows how much potassium reservoir the soil has. He stated that to be sure that no further response would be obtained, a farmer would have to build up his soil to a reserve of 400 lb. per acre. But by building up to a 200 lb. reserve, he would get about 95% as much benefit as with twice that amount, Mr. Melsted said.



BIG SHIPMENT—Shown above is part of a 12-railway tank car shipment of agricultural emulsifier being made by Stepan Chemical Co., Chicago, to the Tampa, Fla. plant of Stauffer Chemical Co. and then on eventually to Egypt. Stepan officials said this is the largest single shipment of agricultural emulsifier ever made. It will be used in formulating an eventual 20,000,000 lb. of Toxaphene liquid spray, which Stauffer is supplying on contract to the Egyptian government. This also represents the largest single shipment of formulated insecticide ever made, Stepan said, constituting an entire shipload, and is for control of insects in the production of Egyptian cotton. The emulsifier is used to make the insecticide water miscible and is a member of the Toximul series, originally developed by Ninol Laboratories, Inc., which firm was recently purchased by Stepan Chemical. According to Alfred C. Stepan, Jr., president and founder of Stepan Chemical, the emulsifier was produced in record time to meet delivery requirements, shipment was made possible by close coordination of the three Stepan plants in the Chicago area.

Industry-College Representatives Discuss Research Program

PORTLAND, ORE.—Twenty-five primary producers and fertilizer manufacturers met with the Oregon State College soils department staff recently to scan the research program of the college. The session, initiated by the Pacific Northwest Plant Food Assn., was the first of its kind in the Pacific Northwest.

The college staff, headed by Dr. H. B. Cheney, soils department head, had a prepared program all the way from resident instruction to the extension service including a wide variety of research work. Industry members were given free rein in the discussions that followed each talk.

One of the chief subjects which came in for wide discussion was that of "degrees," and how necessary they were in the commercial fertilizer industry. Master of science degrees were the target of industry members, who were generally of the opinion that they were not necessary for students who intended going into commercial fertilizer sales work. Industry representatives told college staff members that few of the soils students had enough basic business courses, and these were far more desirable than master of science degrees. Speech courses were also suggested by the industry.

However, for students who intended to go into teaching or research, it was generally agreed that not only master of science degrees but also Ph.D.'s were vital.

College staff members explained the different types of research work going on, and these received the whole-hearted support of industry.

Discussions were informal and the one day session was considered not only by industry but also by the college as being highly informative. It probably will become an annual event.

Weed Killer Firm Sets Up Headquarters

PLAINVIEW, TEXAS—The Doherty Weed Killer Co. has established headquarters in Plainview, and will work in a large West Texas area, according to Fred Doherty, owner and manager.

Mr. Doherty said there were 300,000 acres of Texas land infested with bindweed. Control methods are practiced in many sections, but Mr. Doherty says the weeds should be destroyed, not just kept under control. Bindweed was little known in Texas a decade ago, but has now spread over vast areas in West and South Texas.

Recently the Doherty company received a request from a Russian agricultural official about bindweed. Mr. Doherty expects to reply to the letter.

California Association To Meet in Los Angeles

SAN MARINO, CAL.—The 35th annual convention of the California Fertilizer Assn. will be held at the Ambassador Hotel, Los Angeles, Nov. 9-11, 1958, it has been announced by William G. Hewitt, association president. Between 500 and 600 are expected to attend.

The CFA board of directors named the dates and chose this location for the 1958 convention at a recent meeting held in San Francisco. Mr. Hewitt said the convention is customarily held in even-numbered years in southern California, and in alternate years in northern California.

John Hooper of Wilson & Geo. Meyer & Co., Los Angeles, is chairman of the convention program committee. Other members of his committee are Thomas Barnard, Newport Beach; Frank Scoville, Chula Vista; Clark Sumner, South Gate; and Dexter Thompson, La Canada.

Thomas Lathe, also of Wilson & Geo. Meyer & Co., Los Angeles, is chairman of the entertainment com-

mittee. Assisting him are Robert J. Gigler and Frank McGrane, both of Los Angeles.

Mrs. Frank McGrane is chairman of the ladies committee, assisted by Mrs. Mel H. Howard of Rolling Hills, and Mrs. Murray C. McNeil of San Marino.

Hercules Net Sales Show Gain in 1957

WILMINGTON, DEL.—Hercules Powder Co. has reported net sales and operating revenues of \$245,265,000 for 1957, which represents an increase of 4% over the 1956 figure. Net income in 1957, after all charges, was \$18,116,000, equal to \$2.14 a share of common stock. This is a slight increase from 1956 when net income amounted to \$17,703,000, equal to \$2.13 a share.

According to the annual report, 7% of the company's products were consumed during 1957 by the agricultural chemicals industry.

Mylone Soil Fumigant Tested for Turf Pests

NEW YORK—Mylone pre-planting test applications on turf are giving good control of weed seeds, soil diseases, insects, and nematodes, according to Union Carbide Chemicals Co., Division of Union Carbide Corp. The tests have been conducted throughout the country by agricultural experiment stations, turf growers, and nurserymen.

The product is already being used successfully before planting to control soil pests in ornamental, tobacco, and certain vegetable seed beds, the makers state. The company manufactures the basic chemical and supplies it to formulating companies which produce their own trademarked products, based on Mylone, for commercial sale.

Carbide points out safety factors and ease of application as being outstanding. The formulated dry product is distributed with a fertilizer spreader over the surface of the turf

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bed and then irrigated into the soil. No plastic cover is needed on the bed.

Like most soil fumigants, Mylone must be applied ahead of seeding or sprigging in the spring and allowed time to dissipate so it will not affect the young grass, the company explains. A three-week waiting period has been sufficient during turf test applications.

If the grower desires, Mylone can also be used in the fall before spring planting, according to Carbide.

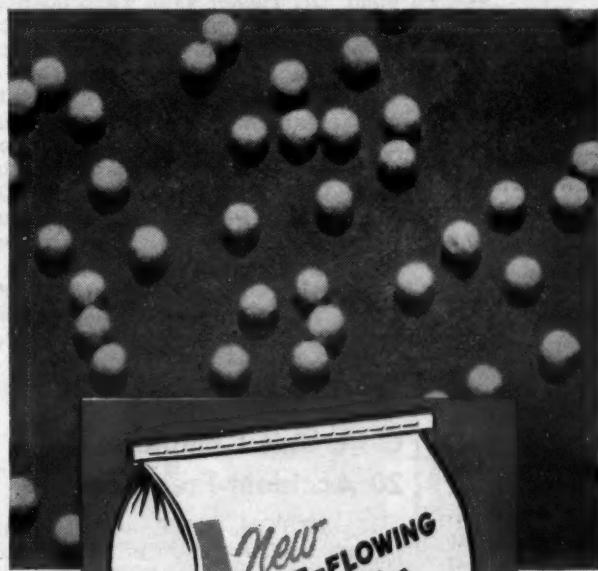
HIGH SUGAR BEET YIELD

PASCO, WASH.—Pasco's Agriform fertilizer outlet has awarded a Columbia Basin farmer a \$100 credit for the highest sugar beet yield in Franklin County. Howard Skelton, who farms in Block 15 of the Columbia Basin Project north of here, averaged 33.85 tons per acre on his 1957 sugar beet crop. Eugene Crabtree of Block 15 was awarded a \$25 Agriform credit for growing the largest sugar beet in the county—a 32.4 lb. beet.

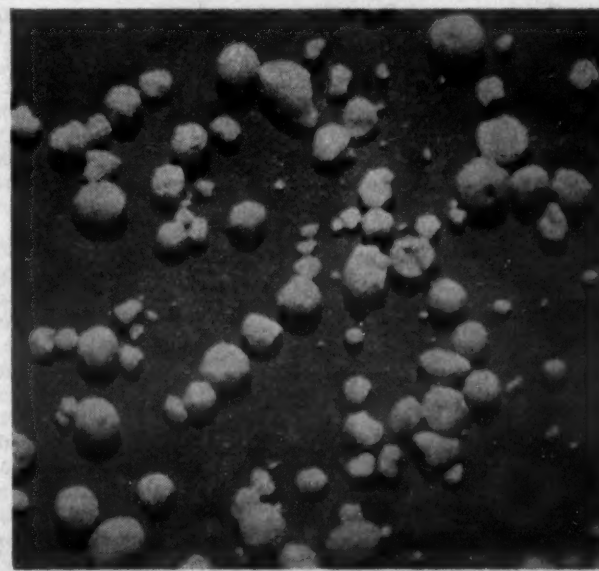
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Des Moines, Iowa—6th Floor, Hubbell Bldg.

Houston, Tex.—6910 Fannin Street
Indianapolis, Ind.—1112 N. Pennsylvania St.
Kansas City, Mo.—500 West 39th St.
Minneapolis, Minn.—212 Sixth St. South
New York, N.Y.—80 Broadway
Omaha, Neb.—3212 Dodge Street
Pasadena, Calif.—330 Security Bldg.

Raleigh, N.C.—401 Oberlin Road
Salt Lake City, Utah—68 South Main
Spokane, Wash.—521 East Sprague
St. Louis, Mo.—4251 Lindell Blvd.
Tampa, Fla.—3737 Neptune St.
Tulsa, Okla.—1708 Utica Square
Wichita, Kansas—501 KFH Bldg.



Research and Extension Goals Reviewed at First Arizona Fertilizer Conference

TUCSON, ARIZ.—The department of agricultural chemistry and soils at the University of Arizona has been expanded with an eye toward the goal of obtaining reasonably high yields on all farms in the state, rather than extreme highs in a few small areas, Dr. W. H. Fuller, head of the department, told the first Arizona Fertilizer Conference here recently.

During the past 18 months the department has added five young men to its staff, making a total of eight. The Agricultural Research Service of the U.S. Department of Agriculture has added three men in the state, to make a total of six.

Using the farmer's land, work is being coordinated with fertilizer research aimed at basic properties. Sound recommendations must be based on long time work which forestalls any quick answers, Dr. Fuller said.

Various members of the department of agricultural chemistry and soils and other departments in the Arizona agricultural experiment station reported on the work in which they are presently engaged and told of future plans. This work consisted of short term data, as yet incomplete, and not ready for publication.

Physiological change in plants during the different growth stages and the influence of plant food elements on these growth stages are unknown in most plants. This is felt to be an area of need in research work and was expressed as a part of future experimentation.

Dr. C. O. Stanberry, ARS, stated that potential yield is governed as production practices affect given factors leading to yield. Barley yield is directly influenced by stand (plant population) since a half stand cannot produce as much as a full stand; tillering since two heads should yield more than one, grains per head since genetically 200 or more are possible although cultural practices may result in 50 grains or less, and finally size or weight of individual grains since plump grains outweigh shriveled ones. When we know how to effect each of these factors under different climatic, soil and management practices, we should know how to produce barley in Arizona, China or South America, Dr. Stanberry said.

However, too often production practices are evaluated only by final yields, he said. Since this is an indirect result of the four direct factors mentioned previously, the secrets of production cannot be found through evaluation of the final product alone. It may be impossible to determine

how to produce without evaluating these direct factors. The same principles apply to other crops. Research is only starting to investigate these direct factors in crop production.

Field plot size is governed by the use of cultural practices and machinery as used by the farmer. The smaller the plot, the greater the degree of accuracy due to less soil variation; also the larger the number of plots handled per research worker. This is contrary to common belief but may be proved statistically in research work, Dr. Stanberry said.

Lyman Amburgey, university soils specialist, described progress from older experiments involving extension workers to the mobile experiment station program now in use. Taking research to the problem leads to greater understanding and improved methods, he said. The place of the extension worker is as a field teacher cooperating with research and the farmer getting information out and expressions of need back to research workers. Extension workers assist research workers in locating cooperators, establishing, observing and harvesting outlying experiments. Recommendations are general from the state level and detailed by the county agricultural extension agent who may best know the local situation—the farmer, and his individual farm.

Opening the panel discussion, Mr. Amburgey placed plant food as one member of the soil fertility team.

"Although we cannot agree with organic farming completely, we recognize the good soil management practices generally found to be a part of such a program," he said. "Soil management cannot be bought in bags. Control of plant diseases and insects, friability, freedom from salts may be other members of the team. Extension, research and related industry workers are members of a team serving farm people."

Boyd Gibbons, president of the Arizona Agricultural Chemicals Assn., discussed the fertilizer and insecticide business and its ethics. The day of the "fertilizer peddler" is gone and scientists, engineers, etc., (degree men) have taken their places. He felt that coordination, cooperation and the realm of practicability were keynotes of the meeting, that group ideas and requests for assistance should be interchanged more freely, and that any preconceived notions on soil fertility in the past should be discarded in favor of new developments.

Dr. Henry Schreiber, Yuma soil and

crop laboratory, presented the regional outlook of his group working with soil fertility and water with yield being but a small part of the picture. He felt that local work such as variety and date of planting should be left to the state.

M. F. Wharton, Arizona Fertilizers, Inc., posed the problem of overproduction and marketing with 1957 being the greatest year with these problems. Complete relaxation of controls and subsidies are no more the solution than is our present situation, he said. There must be some solution between the two extremes. Quality improvement provides for sales outlets. As an example, greater fiber strength in cotton is a major problem to thread manufacturers. Quality should receive the same emphasis as yield in research.

Dr. Fred Turner, Jr., department of agricultural chemicals and soils, discussed quality production in horticultural crops and the use of short and long term experiments. He pointed out that rapid changes in types of experiments were apt to lead to no real solution to problems.

Sam Madsen, Olin Mathieson Chemical Corp., stressed the importance of improved communications in overcoming the time lag between research findings and field application. Previous cropping history and an over-all look at fertility (all major plant food elements) are vitally important in a research program that yields results, he said.

Dr. T. C. Tucker, department of agricultural chemicals and soils, outlined the responsibility of all the group to one group—the people of Arizona—with no particular responsibility to any single segment of the group. Basic and applied research should be carried on simultaneously to sustain the long term agricultural economy.

Quality should be studied with yield, Dr. Tucker said. Yield possibility is defined as maximum theoretical or potential yield. Conditions affecting these are physical condition of soil, kind and population of plants, climate and water supply and management. Yield possibility is not affected by inherent nutrient supplies or added commercial fertilizers, Dr. Tucker said. Plant food is important in determining actual yield or attainment of the yield possibility but is not considered as limiting in this definition, he said. Present investigations are but a scratch on the surface of the over-all problem.

C-I-L Unit Completes 20 Accident-Free Years

HAMILTON, ONT.—The superphosphate department of the agricultural chemicals plant of Canadian Industries, Ltd. here recently rounded out 20 years, and more than 500,000 man-hours, without a lost-time accident.

According to H. M. Jones, works manager, the last mishap in the department was in 1938 when an employee's knee was caught in a conveyor belt.

Under a plan backed by C-I-L, the men themselves are responsible for their own safety on the job. They elect their own safety committees, hold monthly safety meetings and make regular inspections of all corners of the plant.

"When it comes to safety, the men in the superphosphate unit work as a team," Bill Plummer, production superintendent, says. "They work on the principle that safety is every man's business. They regard safety as important a product of their daily efforts as the superphosphate they produce."

"The superphosphate unit is in operation 24 hours a day and the record of 20 years without a lost-time accident is a tribute to the high spirit of safety and teamwork they've achieved and passed on from shift to shift."



Charles E. Trunkey

JOINS USI SALES STAFF—Charles E. Trunkey, for the past three years associated with the Middle West Soil Improvement Committee, Chicago, has joined U.S. Industrial Chemicals as a sales representative covering the state of Iowa. Mr. Trunkey will call on USI accounts for the company's line of nitrogen solutions, anhydrous ammonia, aqua ammonia and phosphoric acid products, as well as industrial alcohols and other chemicals. He will work under George Stanton, Chicago divisional sales manager for USI.

Mr. Trunkey joined the Middle West group in 1954 as assistant secretary. He is a graduate of Iowa State College and a native of Iowa.

Nearly 600 Farmers Become Subscribers to California Ammonia Co.

OAKLAND, CAL.—More than 585 farmers have become Class "A" subscribers to the California Ammonia Co., it was announced recently by Best Fertilizers Co. of this city. The farmers, who come from a 250 mile radius of the plant presently under construction in Lathrop, Cal., represent a variety of California crops using the products and by-products of such an installation.

Company officials report that an office building at Lathrop will be completed on March 1 and that the multimillion dollar ammonia plant is expected to be completed by November.

The California Ammonia Co. is a cooperative venture between the farmers of the area and Best who is acting as construction supervisor. Presently on the Lathrop site are various other production plants supplying the needed components for fertilizer manufacturing.

Oregon Seed Growers Eye Foreign Outlet

PORTLAND, ORE.—A 10-year forage grass seeding program on Japanese hills and woodlands is being eyed by Oregon seed growers as a promising outlet for half a dozen major state seed crops.

Formation of an Oregon Seed Council is scheduled soon to plan action for tapping the new market, along with potential markets in South America, according to Rex Warren, Oregon State College farm crops specialist, and secretary of the Oregon Seed Growers League.

Dealers, growers and representatives of Oregon State College and the state department of agriculture are slated to form the council.

Seed varieties expected to be in most demand in Japan for the seeding program there are ladino and red clovers, alfalfa, tall fescue, orchard grass, perennial ryegrass and possibly fine fescues and bentgrasses.

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Virus Disease Cuts Flowering, Seed Output of Ladino

WASHINGTON—Virus infections such as alfalfa mosaic and bean-yellow mosaic—which can reduce forage yields of Ladino white clover by 23 to 55%—may also cause devastating losses in flowering and seed production of this crop, the U.S. Department of Agriculture reports.

In recent experiments at USDA's Agricultural Research Center, Beltsville, Md., Kermit W. Kreitlow and Oliver J. Hunt, forage-crop specialists, found that these two virus diseases reduced flowering in Ladino clover about 20 to 44% and seed production about 29 to 54%.

These findings on seed yields have stimulated a search for resistant varieties of Ladino clover. One method of testing present varieties for resistance is to inoculate Ladino seedlings with alfalfa and bean-yellow mosaic viruses. By this means, scientists can determine seedling susceptibility in 4 to 6 weeks after the seed is planted, thereby speeding up selection and development of resistant material.

The USDA researchers also studied effect of the viruses on seed germination and made tests to see whether these diseases were transmitted to clover plants through the seed. The experiments showed only a slight difference in the germination of seed harvested from virus-infected and healthy plants, and demonstrated that transmission of these two viruses occurs rarely, if at all, through Ladino white clover seed.

All plants used in the seed-yield tests at Beltsville were grown from cuttings taken from two healthy mother plants. For the greenhouse trials, a mixture of alfalfa-mosaic and bean-yellow-mosaic viruses was used to inoculate some plants of one of these two lines. A total of 320 healthy cuttings and an equal number of virus-infected cuttings from this genetically identical line were grown side-by-side.

Maximum flowering occurred 50 days after transplanting. At that time a total of 1,322 flower heads were produced on the 320 healthy plants, or an average of 4.13 heads per plant. In contrast, only 902 flower heads were produced on the 320 virus-infected plants. This was an average of 2.81 heads per plant, or a loss in flower production of 31.7%. Since Ladino clover is normally cross-pollinated by bees, no seed was produced in the greenhouse tests.

Similar results were noted in field tests of seed yield, where plants of both lines were planted in three plots, each containing 120 plants. In these tests, virus-infected plants of one line produced 44% less seed than the healthy plants, and in the other line the seed-yield reduction was 29%.

Because alfalfa and bean-yellow mosaic viruses are not transmitted through the seed of Ladino clover, stands of this crop do not become infected as rapidly or severely as those of some other legumes. If the diseases were transmitted through the seed, even greater losses in forage and seed yields of Ladino clover would result, the specialists say.

HEADS COMMITTEE

HOUSTON, TEXAS—Sherman W. Clark, manager of the agriculture department of Texas Gulf Sulphur Co., has been appointed chairman of the Houston Chamber of Commerce agriculture committee. Active in many agricultural activities, Mr. Clark is a director of the Houston Farm and Ranch Club and a member of the advisory committee of the vocational agriculture department, Houston Independent School District. He is also associate arena director and livestock committee chairman for the Houston Fat Stock Show.

Forest Fertilization Conference Scheduled

SAN MARINO, CAL.—A California Forest Soils Fertilization Conference will be held Feb. 28 at Sonora Inn, Sonora, Cal., under the joint sponsorship of the National Plant Food Institute and the California Fertilizer Assn.

In announcing the conference Sidney H. Bierly, CFA general manager, said, "Research has been going forward in other areas for some time, and some spectacular results have occurred. The conference will hear reports on some of these long-time experiments. The University of California is interested in prosecuting an extensive forest soils research program in the various forest producing areas of this state."

"Our two fertilizer industry associations wish to cooperate in every way possible, and are calling this conference as a means of bringing

into focus results of work in other areas, and to determine what industry can properly do to assist.

"Our purpose is to learn, as quickly as possible, through this qualified research institution, whether fertilizer applications will prove to increase our forest resources to a significant degree, as they have in other areas. If so, our entire economy will benefit immeasurably."

Herman A. Rodenhiser Appointed to USDA Research Position

WASHINGTON—Dr. Herman A. Rodenhiser has been named to succeed Dr. Karl S. Quisenberry as assistant administrator for farm research in the U.S. Department of Agriculture's Agricultural Research Service.

Dr. Quisenberry, who has helped direct USDA research programs since November, 1953, retired from government service Jan. 31. He has accepted two temporary assignments in South America, where he will work with the Rockefeller Foundation as technical advisor on wheat research in Chile and with the North Carolina Agricultural Experiment Station on small-grain improvement in Peru.

Dr. Rodenhiser has been in charge of research on cereal crops and diseases in the Agricultural Research Service since January, 1952, directing crop-plant studies designed to insure the stability of U.S. grain production. In his new position Dr. Rodenhiser will assist in the direction and coordination of USDA research programs in crop production, soil and water conservation, agricultural engineering, entomology, animal husbandry, animal diseases and farm economics.

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Study of Trace Elements in Great Britain Shows Crops Need Wider Nutritional Diet

By Prof. T. Wallace

Director of Britain's Agricultural Research Council Unit of Plant Nutrition and Fellow of the Royal Society, London

A study of trace elements in connection with England's agriculture has been under way for a number of years, and has come up with some important information on the effects of both deficiencies and excessive amounts of several mineral elements other than nitrogen, phosphorus and potassium.

The program began originally during World War II when the British Government was seeking to increase food production and had converted much grassland into crop-yielding acres.

Having started the investigations with the original small group of workers, the Agricultural Research Council later established in 1952 a unit especially concerned with trace elements at Britain's Long Ashton Research Station. The new unit was formed to continue on a more permanent basis, the earlier investigations by a small group of workers originally selected by the director to study problems of crop production arising from the extensive plowing-out of grassland.

Results from these investigations, showing the importance of many mineral elements in the production of crops in newly-plowed areas, were new both to farmers and their technical advisers. In particular, the importance of deficiencies of calcium, magnesium, iron, manganese and boron, and excesses of manganese, aluminum, copper and zinc were demonstrated, and methods developed for diagnosing and correcting their injurious effects in different crops.

The investigations had included surveys of unusual crop failures, and these, in conjunction with field experiments on failure sites, added deficiencies of copper, zinc and molybdenum to the list of deficiencies of economic importance. It will thus be apparent that the work had focused attention on the importance of trace elements for crops, and the special study of these formed a natural extension of the group's activities.

Methods developed for the diagnosis of the mineral status of crops during the course of this work presented many novel features, and their importance to farmers and advisory officers was early recognized by the Council,

which sponsored the publication of a "Color Atlas and Guide to Mineral Deficiencies of Crops." This was first prepared by the director in 1943 as a wartime edition for farmers and advisory officers, and later published by Her Majesty's Stationery Office in London in a more comprehensive form in 1951.

The visual methods of diagnosis described in the atlas had been based on refined methods developed at Long Ashton for the growing of plants as sand and water cultures, and their suitability for fundamental studies of micro-nutrient elements in plant nutrition (described in a Commonwealth Bureau technical publication) led naturally to their use after the war for investigations of the role of these elements in plants. This work necessitated greatly extended facilities and the provision of elaborate equipment to produce plants of different and known mineral status for use in highly specialized biochemical and biological studies.

With the provision of these increased facilities the original group was constituted as a research unit of the Agricultural Research Council at Long Ashton under its present direction.

At the present time the staff of the unit comprises a director, eight scientific officers and 23 scientific assistants, and there is usually a small number of graduate workers engaged on special problems for higher degrees in the University of Bristol.

The program of work, centered around the plant micro-nutrients, comprises the following: the functions of micro-nutrients in the nutrition of higher plants; the nutrition of micro-organisms; the main groups of organic constituents of plants and the effects on them of micro-nutrient status; valency changes of micro-nutrient elements in plant biological systems and the occurrence and changes of metal complexes in plant tissues and soils; the biosynthesis of haem and chlorophyll in higher plants and in algae; factors determining the availability of micro-nutrients in soils, and problems of fertility of tropical soils.

To carry out this program, the unit has been provided with modern greenhouses for growing plants in sand and solution cultures, with facilities for using radioactive isotopes; special chambers for the controlled growth of isolated plant tissues (tissue cultures) and micro-



CHECKING PLANT NUTRITION—Scientist at the agricultural research unit of plant nutrition at the Long Ashton Research Station of the University of Bristol, England, checks the chemical feeding of tomato plants. The plants are grown in sand prepared for freedom from nutrients, so that their total growth is the result of nutrients dissolved in distilled water and applied to the plant. Experiments made over a period of years enable the station to determine the cause of crop failures, as related to the availability of minor elements and other mineral nutrients.

organisms; and a range of low temperature rooms; special laboratories are also available for the highly specialized studies undertaken in biochemistry and organic chemistry.

The work, both of the original wartime group and of the later unit, has attracted the attention of workers in the field of plant nutrition in many countries, and many have worked in the unit for short periods to familiarize themselves with its work and to learn some of the special methods

used for application to their own problems. Methods employed in the sand and solution culture work have attracted attention throughout, and these are now being used with great effect overseas on a wide variety of crops at research centers such as the West African Institute for Oil Palm Research and the Rubber Research Institute of Malaya and by research officers in West and East Africa.

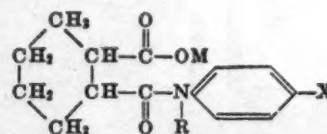
To satisfy a demand for knowledge of the Long Ashton methods the British Council in 1952 organized a special course at Long Ashton for re-

(Continued on page 19)

Industry Patents and Trademarks

2,821,467

2-(p-Halophenyl Carbamyl)-Cyclohexane Carboxylic Acid Herbicides. Patent issued Jan. 28, 1958, to Norman J. Lewis, Kirkwood, Mo., assignor to Monsanto Chemical Co., St. Louis. A new compound having the structure:



wherein M is selected from the group consisting of hydrogen, alkaline metal, ammonium and amino radicals, X is a halogen atom, and R is an alkyl radical.

2,821,483

Processes for the Disinfestation of Vegetable Products by Means of Toxic Gases. Patent issued Jan. 28, 1958, to Felice Bonomi, Milan, Italy, assignor of one-half to Ernesto Buehler, Milan, Italy. A process for disinfesting vegetable products which comprises enveloping said products with an artificial atmosphere consisting essentially of oxygen and nitrogen in which an atmosphere of from 50-70% oxygen is applied to insect infested products and an atmosphere of from 90-95% nitrogen is applied to larvae infested products for a period of time sufficient to enhance the physiological activity of the insects in one stage of their development and thereafter introducing toxic gases into said atmosphere in a concentration toxic to said insects but non-toxic to said products.

2,821,500

Coated Dustless, Granular Insecticide for Flies, Their Larvae, and Other Insects. Patent issued Jan. 28, 1958, to Julian H. Jackson and Herman S. Mayeux, Jacksonville, Fla.,

and William J. Head, Lake Jem, Fla., assignors to Wilson & Toomer Fertilizer Co., Jacksonville. An insecticidal composition in granular form, characterized by inorganic, non-porous, water-insoluble granules with particle size range from 3 to 100-screen mesh inclusive, as a carrier coated with an oil solution of an organic toxicant for the insect, and an organic attractant for the insect, which inorganic granules constitute approximately the entire solid carrier in the granular insecticide, and which oil is substantially non-volatile at atmospheric temperatures and relatively non-drying, the said granular insecticide being relatively free of loose, unattached pulverulent particles, substantially free from clumping and readily pourable, and is relatively dustless upon being poured from a container and under normal conditions of hand distribution.

Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

3-A-T, in capital letters, for defoliant. Filed Nov. 20, 1957, by American Cyanamid Co., New York. First use July 11, 1956.

Agripes, in heavy capital letters, for insecticides for agricultural use. Filed May 13, 1957, by Ensenat & Co., Inc., doing business as Agricultural Pesticide Export Co., New Orleans, La. First use Aug. 14, 1955.

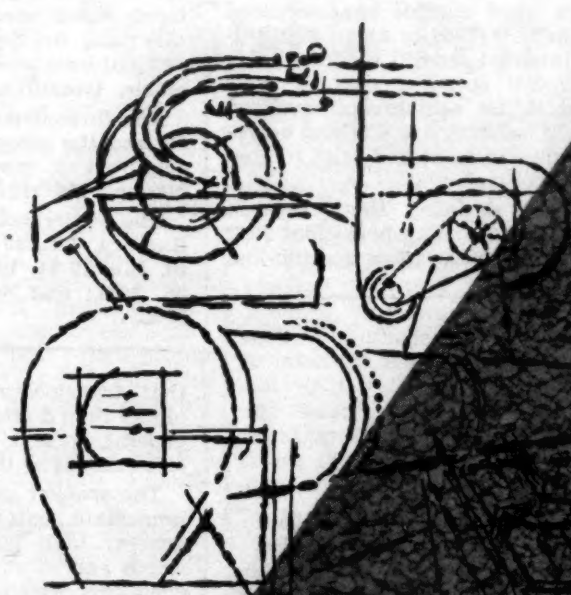
FEC, in hand-drawn capital letters superimposed over drawing of map of Florida, for fertilizers. Filed June 27, 1958, by Florida East Coast Fertilizer Co., Homestead, Fla. First use Sept. 1, 1949.



For details, see ad on page 13



Prof. T. Wallace

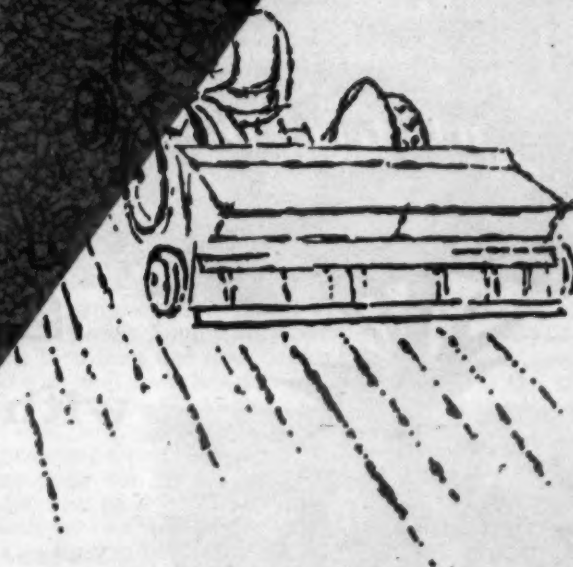


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CALIFORNIA MEETING

(Continued from page 1)

cultural chemicals division, American Chemical Paint Co., Ambler, Pa., sounded the conference theme of "Progress and Promise in Ten Years."

His discussion of weed research progress on a national scale during the past ten years set the theme for other reports on herbicide industry progress in the past decade, progress in fundamental weed research in California and expanded interest in weed control and its effect on regulatory programs.

Declaring that previous weed control concepts changed radically following the discovery of 2,4-D and its related compounds, Mr. Beatty said that less than ten years after the inception of selective chemical weed control, 85,000,000 pounds of herbicides were applied to over 30,000,000 acres of cultivated land in the United

States. He further noted that the U.S. Department of Agriculture's weed investigation section has grown from a few part time workers to a separately administered unit with 60 full-time research specialists.

Although basic physiological studies are bearing fruit in the practical field of weed control, Mr. Beatty said that various plant, climatic, and environmental conditions, along with the character of the specific weed killer, cause marked variations in results.

Mr. Beatty observed, however, that basic research on how chemical weed killers affect plants, the study of weed life cycles, and the investigation of weed seed viability lag far behind herbicide screening and field testing programs. He declared that expansion and extension of these studies will do a great deal to promote more effective

and efficient methods for controlling weeds.

Dr. G. D. Hill, E. I. duPont de Nemours & Co., Wilmington, Del., told of revolutionary advances in cropland weed control during the past 15 years. These advances, he said, challenge research workers to develop better weed control methods for lawns, nursery stock, vegetable crops, ornamentals, forest and range land.

Speaking on "Weed Control in the Future—Summary and Prophecy," Dr. Hill pointed out that in a little over two decades, the number of people in the United States giving full time to weed control has increased from three in 1936 to about 140 full-time state and federal workers, with another 300 spending part of their time at it. He said several hundred people in industry are working on research, development and sales related to weed control.

Dr. Hill declared that research should aim at finding herbicides that are more selective, more specific and

OFFICERS ELECTED

SAN JOSE, CAL.—Members of the California Weed Conference, in its meeting at San Jose, Jan. 22, named J. T. Vedder of Hanford president. Mr. Vedder, a representative of Sunland Industries, Inc., Fresno, succeeds Dr. Vernon I. Cheadle, head of the botany department, University of California, Davis.

Other new officers are Bruce Wade of Redding, Shasta County agricultural commissioner, vice president; W. B. McHenry, University of California weed specialist, Davis, secretary; and Dr. Boysie Day, University of California plant physiologist, Riverside, treasurer.

The three day meeting, ending Jan. 23, and the second to be held at San Jose, set a new conference record here of 424 registrations.

The conference will meet in Santa Barbara, Jan. 20-22, 1959; Sacramento, Jan. 19-21, 1960; Fresno, Jan. 24-26, 1961; and San Jose, Jan. 23-25, 1962.

that translocate more rapidly into plants than do existing compounds. In general, he said, more efficient herbicides should be the goal.

The speaker said that some of the immediate goals are herbicides with a general high potency on perennial weeds and short residual life in soil; chemicals which induce sprouting of weed seeds to permit weed control by tillage before crops are planted; compounds with short residual life to kill weed seeds, weeds, plant disease organisms, and other soil-borne pests; an effective residual pre-emergence herbicide that is not influenced by weather and soil factors; an effective post emergence herbicide that enters weeds through leaves as well as roots; and weed killers of narrow selectivity for use in such crops as corn, soybeans, tobacco and peanuts.

"Integration of chemical and cultural practices represents one of our least exploited, and most promising phases of weed control," Dr. Hill said. "By a mass switch from cultural weed control to chemical weed control, rather than a careful blending of the two practices, two types of problems have been created," he declared. The duPont representative said that the first problem is development of resistant weed species by natural selection due to partial kill; and the second is replacement of one weed species by another, as has happened in Midwest grain fields, where use of 2,4-D has controlled broadleaved weeds while grasses have had a chance to increase.

Dr. Hill emphasized the need for economic studies of weed control problems which will show the farmer that good weed control practices can put money in his pocket.

Chester E. Otis, Dow Chemical Co., Midland, Mich., explained how the weed control business has grown in the U.S. during the past decade. He declared that from 1947 to 1954, manufacturers' sales of weed killers grew from \$8 to \$36 million, while in the same period all pesticide sales increased from \$119 to \$275 million.

In discussing product discovery and development within industry, Mr. Otis said that industry is now investing an estimated \$15 million a year into developing and testing new pesticides, as compared with \$8 million in 1950.

In presenting industry's responsibility in developing agricultural chemicals, the Dow Chemical Co. representative pointed out that it is to the best interest of all concerned for industry, (1) to do the basic routine screening of compounds; (2) to synthesize and study compounds related to those that show desirable activity; and (3) test them in fields of interest in order to secure patent protection. He said that it should also be the responsibility of industry to determine in a general way, the possibilities and limitations of compounds emerging from such a program.

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Entomologist's Training Put to Work in Building Profitable Pest Control Trade

By Jess Blair
Croplife Special Writer

V. E. Romney of Kimberley, Idaho, spent 15 years as an entomologist with the U.S. Department of Agriculture before deciding to establish his own pest control service about five years ago. Since that time he has become so well established in the Snake River Valley that last year's profits amounted to over \$12,000. Since he owns 75% of the company with his brother-in-law, J. H. Henry, his own profits amounted to \$9,000. Since the season lasts from April 1 until sometime in August, this figures to nearly \$2,000 a month net profit.

The secret of his success may be described by taking up one point at a time. To begin with, he knew the secret of giving satisfactory work was in getting good equipment. He had spent many years working on turbine pumps and finally came up with one that will put out a thick swath of spray from 60 to 80 ft. wide.

These pumps are mounted on two jeeps which are used altogether for every kind of job. Another thing he spent much time on was getting the proper kind of nozzle. Each pump will put out seven gallons a minute, which is enough for a heavy application of spray on every plant.

When Mr. Romney takes a job, he plans and executes the whole operation from start to finish. He makes a field check of the insects to determine the amount of infestation. He wants to know every kind of insect in the field before starting work. He then decides what insecticide to use and the amount. Finally he has the jeep driven to the field and the spraying begins.

"Sometimes we can save the farmer money by making a field inspection first," he says. "The infestation may not be as severe as he thinks, or it may be so bad that more poison will be needed."

Since the Snake Valley produces many kinds of crops, there are also many kinds of insects. Hardly a week

passes during the growing season without an infestation of some sort. The main ones are alfalfa weevils, redback cutworms, white flies, Colorado potato beetles, grasshoppers, lygus bugs and several others.

"I don't know of any area as complicated as this one," says Mr. Romney. "We must know when to apply insecticides, but we also keep in mind the beneficial insects and try not to destroy them too quickly in the season. If they are allowed to build up for a few weeks, it often reduces the harmful insects and saves the farmer money."

In managing the business, he has kept close figures on the cost and profit of insect control. He can prove to farmers that \$3.50 an acre spent on sugar beets will give them two tons more per acre. He also has figures on other crops, particularly the cash crops such as potatoes.

Because his reputation soon spread throughout this part of Idaho, he was offered a working agreement with sugar beet companies. Now he sprays the fields for the growers, sends the bill to the sugar companies and they pay off immediately. Later they deduct the amount from the producer's gross sale of beets.

No doubt Mr. Romney's background helped him get started in the pest control service. He holds a master's degree in entomology from the University of Minnesota, and ever since that time has worked with insects and research in chemicals. He also has done some of the work in developing a sugar beet that is resistant to the white fly. Much of this work had been done in Ohio before he came to Idaho.

Knowing chemicals so well has caused him to become very cautious in handling the dangerous ingredients. He is not only strict in having his employees follow rules of safety, but he takes great precautions in applying the spray. He surveys the site and learns what crops are on the adjacent fields before starting the rigs.

Another thing he worked out that brought in much new business was devising a method to save honey bees. Because so many bee hives are located in the alfalfa and clover fields, the honey bee industry was in jeopardy.

"I found that DDT and toxaphene were not toxic to bees unless sprayed on them," Mr. Romney says. "The bees do not stir at night, so when the bee hives are located near the fields, we start work at 3 a.m. and finish the job before daylight."

Because he gives a complete control service, Mr. Romney will not cut prices. He has one price for each job. He gets \$2 an acre for spraying alfalfa, \$3.50 an acre for sugar beets, \$2.50 for potatoes, and \$2.75 for red clover. The biggest acreage sprayed in 1957 was that of potatoes, which totaled around 3,000 acres. In five years' time, Mr. Romney took in \$150,000 for his services.

Being a scientist, he is not prone to take anyone's word for anything. He is constantly seeking ways of improving pumps and nozzles.

It is the same with control meth-

ods. Many farmers consider him an authority on pest control, and he is often consulted by other scientists, county agents and farm store owners.

"The main thing we're all interested in," Mr. Romney says, "is getting higher yields at lower costs. That is something the control service owner must keep in mind at all times, and should build his business around this fact. We can't make any profit unless the farmer also makes some for himself."

Since the work is seasonal, Mr. Romney has now started a mink farm on a small acreage along the river. For the last two years he has done much experimental work in nutrition and health problems, and says the animals are ready to start paying off.

"My theory in starting a business of any kind," he says, "is first make a survey to see if it's needed. Then get the facts and try to overcome most of the problems. Once this is done, then think big and go ahead." It has paid off with the pest control service.

In the future he hopes to turn the operation of the insect control company over to his two sons and partner.

"I'll remain in an advisory capacity and make field checks for them," he says. "After being an entomologist most of my life, I have no intention of retiring permanently from the work."

SHOP TALK

OVER THE COUNTER

By Emmet J. Hoffman
Croplife Marketing Editor



Since purchasing a small farm store in Deming, N.M., two years ago, Jerry Higdon has been about the busiest young man in town. He started selling feed and baby chicks, but soon found that insecticides and fertilizers were extremely important products in this irrigated, cotton-growing area. Farmers used large amounts of both to get some of the highest yields in the Southwest.

Mr. Higdon then began to plan his business for a complete farm store, where almost every item a farmer needed could be found. He cleaned out one large room of the store and put his farm chemicals, garden supplies and small-packaged goods in it. Thus the H. & S. Farm & Ranch Supply was born.

The fertilizers and insecticides succeeded so well that they now make up 60% of all sales. While these two are the best money-makers, he is also finding that weed killers can be sold successfully for use along irrigation ditches and border strips.

Soon he saw an opportunity to do custom dusting and spraying for cotton and bean insects. Farmers often didn't know what kind of poison to use or how to apply it. Mr. Higdon contacted an aerial crop duster and made an agreement to work together.

Now he contacts the farmer, makes an appointment to do the dusting, and then tells the crop duster. He also collects the money for the job and pays the pilot by the hour. Most of the time the farmers tell him they want the bollworms, cabbage loopers or other insects killed. The kind and amount of poison used are left up to Mr. Higdon.

"This is a nice kind of agreement," he says, "because we can usually get a better kill. A farmer often listens too much to his neighbors and will use some insecticide that is not intended for this particular kind of infestation. Too many times a farmer using his own equipment won't use the proper material."

Mr. Higdon's crop-dusting business

has been very profitable. He covers 90% of the 13,000 acres of cotton at least once, and some of it two or

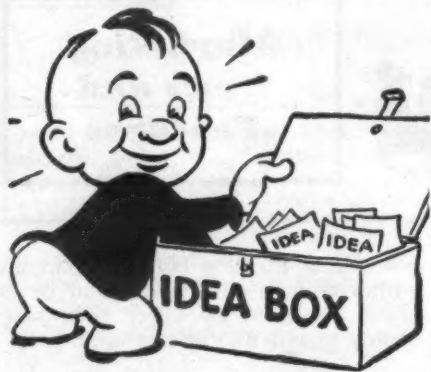
(Continued on page 13)



INSECT SPRAYER—V. E. Romney, head of the Romney-Henry Pest Control Service of Kimberley, Idaho, is shown beside the jeep-powered insect sprayer which he designed and built. Mr. Romney, who holds a master's degree in entomology, was a U.S. Department of Agriculture entomologist for 15 years before establishing the pest control service.



PROFITS RISE—Jerry Higdon, partner and manager of the H. & S. Farm & Ranch Supply, Deming, N.M., says profits increased remarkably after a complete farm chemical department was installed. Here he is shown in front of a pesticide product display.



What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

No. 5952—Dust Filter

Industrial dust control utilizing the new Day type "RJ" dust filter is described in an 8-page bulletin G-579. The cutaway view of filter shows working parts and the filtering principle. The bulletin includes facts on new design, efficiency and operation of the unit. Dimensions, specifications and illustrations of five basic "RJ" units for a wide variety of dust control applications are shown. Check No. 5952 on the coupon and send it to this publication to receive the bulletin. Please print or type name and address.

No. 6686—Plant Food Application

New literature on the "Multi-Spread Process" for distributing plant foods has been prepared by the process developer, A. A. Hurt, and the distributor of the equipment, Suamico Engineering Corp. The process permits the distribution of 25 lb. to 900 lb. per acre of total plant food (complete fertilizer), it is claimed. The three elements can be applied in a wide range of analyses. Each element can be regulated individually. Four slow-speed fans take care of a 30-ft. spread. The equipment can be geared either through power take-off or from the truck's drive shaft. Distribution of the equipment will be through



dealers whose inquiries are welcomed. Check No. 6686 on the coupon and mail it to Croplife.

No. 6685—Gibberellin Bulletin

An 18-page technical bulletin which reviews research findings on the uses of the gibberellins is available from Merck & Co., Inc. The company, which produces the plant growth stimulant under the registered trademark "Gibrel," says the bulletin is especially helpful to those with a technical background. The bulletin contains an annotated bibliography of 188 pertinent scientific papers. Check No. 6685 on the coupon and mail it to Croplife to secure the bulletin.

No. 6687—Soil pH Booklet

Bulletin 731—"What Every Plant Grower Should Know About Soil pH" has been prepared by Beckman/Scientific Instruments Division.

The booklet contains charts, graphs, and illustrations—designed to help both the professional and amateur grower in achieving better lawns, bigger crop yields and more for his fertilizer dollar. The 16-page booklet, written by the well-known agricultural consultant, Dr. Robert E. Atkinson, may be obtained free of charge by checking No. 6687 on the coupon and mailing it to Croplife.

Also Available

The following items have appeared in the What's New section of recent issues of *Croplife*. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

No. 5923—Bulk Scale

The newest addition to the materials-handling line of the Burrows Equipment Co. is a 1,000-lb. model



1200 bulk scale. Company officials said the "heavy-duty scale features a built-in Fairbanks-Morse scale to weigh any lot of material down to the ounce, accurately and quickly, as it is handled." The unit is 38 in. high and 30 in. wide, and has a hopper 40 in. in length. All controls—two-wheel foot-brake, scale, dump handle and pushing handle—are located at the rear, within easy reach of the operator. Standard equipment includes 10 in. rubber wheels at the front and 6 in. roller bearing swivel casters at the rear. Details may be secured by checking No. 5923 on the coupon and mailing it to this publication.

No. 6682—Liquid Fertilizer Booklet

The Sohio Chemical Co. has prepared a detailed book dealing with liquid fertilizer manufacture. The book is entitled "Sohiogen Nitrogen Solutions." The company states, "As a service to our customers now operating liquid fertilizer manufacturing plants and those contemplating liquid fertilizer manufacture, we have attempted to consolidate information accumulated from various sources with our own recent research con-



tributions." Contents include liquid fertilizer definition and history, how liquid fertilizers are made, chemical and physical properties, how to formulate liquid fertilizers (calculations), handling nitrogen solutions, safety and "Sohiogen" products. Secure the booklet without charge by checking No. 6682 on the coupon and mailing it to Croplife. Please print name and address.

No. 6678—Brush Control Booklet

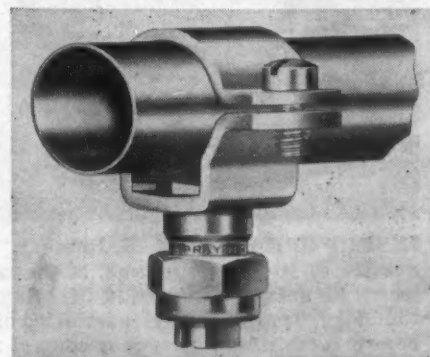
Weeds and brush along power and telephone lines, railroad right-of-ways, pipelines, public highways and on industrial sites such as tank farms can be cleared chemically at a cost averaging one-third below that of hand or mechanical cutting, claims a booklet on the subject published by the Monsanto Chemical Co. The 24-page booklet states that various formulations of 2,4-D and 2,4,5-T and mixtures of these chemicals now make possible year-round programs of foliage, basal and stump spraying for maximum weed and brush control at substantial long-term savings of time and money. A feature of the new booklet is a chart which lists more than 50 common woody plants controllable with 2,4-D, 2,4,5-T and combinations of these chemicals and the recommended rates of foliage spray for each. Secure the booklet by checking No. 6678 on the coupon and mailing it to Croplife. Please print or type name and address.

No. 6684—Rock Phosphate Booklet

A periodical publication, "Bigger Acres," is made available by the Robin Jones Phosphate Co. to show the advantages of using finely ground rock phosphate in restoring depleted minerals in the soil. The publication details case studies to show how rock phosphate is used in increasing farm production at minimum cost. Well illustrated, the pamphlet is suitable for posting on a dealer's bulletin board. To receive the publication, check No. 6684 on the coupon and mail it to Croplife. Please print your name and address.

No. 6680—Spray Nozzles

A newly designed group of split-eyelet spray nozzles and connectors for mounting to spray booms has been announced by the Spraying Systems



Send me information on the items marked:

- | | |
|---|---|
| <input type="checkbox"/> No. 5923—Bulk Scale | <input type="checkbox"/> No. 6681—Valves |
| <input type="checkbox"/> No. 5927—Conversion Kits | <input type="checkbox"/> No. 6682—Liquid Fertilizer |
| <input type="checkbox"/> No. 5929—Tank, Flatbed | <input type="checkbox"/> No. 6683—Fertilizer Survey |
| <input type="checkbox"/> No. 5952—Dust Filter | <input type="checkbox"/> No. 6684—Rock Phosphate |
| <input type="checkbox"/> No. 6678—Brush Control | <input type="checkbox"/> No. 6685—Gibberellin Booklet |
| <input type="checkbox"/> No. 6679—Bagger | <input type="checkbox"/> No. 6686—Fertilizer Applicator |
| <input type="checkbox"/> No. 6680—Nozzles | <input type="checkbox"/> No. 6687—pH Booklet |

(PLEASE PRINT OR TYPE)

NAME

COMPANY

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Minneapolis 1, Minn.

Co. Company officials state that cadmium plated heavy steel that will not bend or break is used for the clamp for strength. Brass, aluminum or stainless steel are used for the parts that touch chemicals. The split-eyelet units are supplied as "No. 7421 TeeJet Split-Eyelet Spray Nozzles" and as "No. 7521 TeeJet Split-Eyelet Connectors." Sizes are offered to fit all standard spray boom piping and tubing, states the manufacturer. A wide range of interchangeable orifice tips may be used with the nozzles. Shown is the No. 7421 nozzle with flat spray tip. Secure details by checking No. 6680 on the coupon and mailing it to Croplife. Please print name and address.

No. 6683—Fertilizer Buying Survey

A brochure entitled, "Four State Fertilizer Buying Study," has been prepared by National Analysts, Inc., for Nitrogen Division, Allied Chemical & Dye Corp. Four hundred farmers were interviewed in Michigan, Indiana, Illinois and Ohio and the results are presented in the brochure. Farmers who answered the survey questions said that the use of fertilizer more than any other single factor has accounted for improved crops and crop production. The brochure also indicates that the dealer is the main source of information about form, analysis and amount of fertilizer to be used. Check No. 6683 on the coupon and mail it to secure the brochure.

No. 6681—Valves

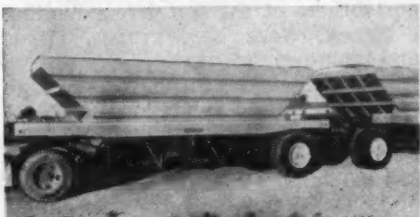
A free 6-page bulletin (J-160) provides information on "OPW-Jordan Sliding Gate Pressure Reducing Valves" manufactured by the Jordan Industrial Sales Division of OPW Corp. The bulletin describes valve features, design changes and method of operation with corrosive and non-corrosive liquids. It contains flow capacity charts, dimensional drawings, control ranges and material specifications. Check No. 6681 on the coupon and mail it to secure the bulletin. Please print or type name and address.

No. 6679—Fertilizer Bagger

A four-page bulletin describing the new Bemis Rapid-Weigh bagger for fertilizers is now available. The bulletin contains performance and engineering data on the bagger, which fills bags with pelleted, granular and meal type fertilizers at speeds up to 24-100 lb. bags per minute. Weight tolerances average plus or minus 2 oz., according to the manufacturer, the Bemis Bro. Bag Co. Secure the bulletin by checking No. 6679 on the coupon and mailing it to Croplife. Please print name and address.

No. 5929—Combination Tank, Flatbed

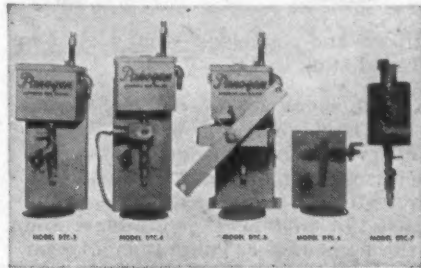
The Fruehauf Trailer Co. is producing a combination tank and flatbed unit suitable for hauling bulk grain, rice, etc., in the tank. For hauling other products, the tank can



be lifted out and the floor can be reinstalled, making the trailer a flatbed. Hopper-type units are illustrated. The company's semi-trailers are 23 ft. long and the 4-wheelers are 21 ft. long. Secure details by checking No. 5929 on the coupon and mailing it to this publication. Please print or type name and address.

No. 5927—Conversion Kits

The Panogen Co. has announced a series of five "dust-to-Panogen" conversion kits. With the help of one of these kits, the owner of a dust treat-er, grain-loading auger, or any other



system which adequately mixes seed, may use liquid Panogen seed treatment and do so inexpensively, company officials claim. Various kit models are designed for gravity feed from elevated containers, for use

where the container of liquid is in high locations and for use where the liquid is circulated via a pump. Further information may be obtained by checking No. 5927 on the coupon and mailing it to this publication. Please print or type the name and address.

Crop Reference Work For California Ready

BERKELEY, CAL.—A series of maps and calendars showing the production areas of important fruit and nut crops grown in California, and the usual harvest seasons for each crop, are contained in a valuable handy reference work published by the statewide University of California.

The manual includes 20 maps. Each map deals with a single crop. On the back of the map are tables which give bearing and non-bearing acreages by areas and counties, the principal varieties and their acreage and market

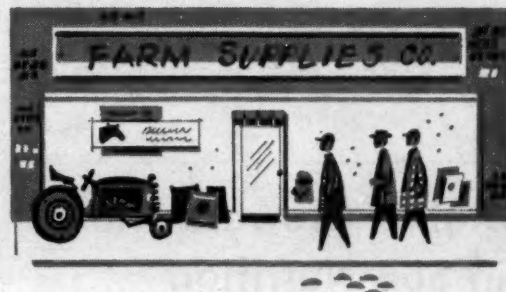
utilization. Harvesting periods showing both total period and peak period of harvest for each crop are given by separate calendars.

One of a series for which a nominal charge is made to return a portion of the production cost so that the material may be produced within the scope of the university publishing program, "The Where and When of California Fruit and Nut Crops," Manual 20, is priced at \$1. It may be obtained through the University of California, Agricultural Publications, 22 Glanini Hall, Berkeley 4, Cal.

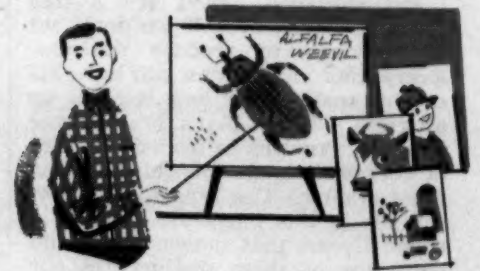
FUNGICIDES EFFECTIVE

WELASCO, TEXAS—Seedling disease of cotton plants has been effectively controlled at the Welasco (Texas) Experiment Station by placing fungicides in a band around the seeds and just above them. The application of Naham gave an increase of 29% in number of plants and a 12% increase of seed cotton over untreated plots.

Sign up now for the 1958 HEPTACHLOR INSECTICIDE DEALER PROGRAM



A NEW
CONCEPT
IN
DEALER
SUPPORT!



THE 1958 HEPTACHLOR INSECTICIDE DEALER "SALES-BUILDER" PROGRAM—Insecticides can be one of your most profitable items. This point has been proven conclusively by those dealers who actively promote and sell insecticides.

In the coming year, we would like to prove to many more dealers that insecticides can be real money makers. For 1958, we have taken the best features of previous Heptachlor programs, and added new features, based on information obtained in discussions with farm supply dealers everywhere. The result is a unique and completely new type of dealer program...

INSECT CONTROL REFRESHER COURSE—We have found that most dealers would appreciate more basic information about the use of insecticides. On the other hand many dealers who are experts themselves must work with inexperienced sales people. Thus, the new Heptachlor program will include an informative "salesmen's insect control refresher course." You and your sales people will be provided with information that will enable you to discuss insecticides more freely with customers. Included in the program will be "down to earth" sales techniques that will enable you to sell insecticides with authority and intelligence.

MONTHLY INSECT CONTROL GUIDE SHEET—Each month you will receive an insect control guide sheet, containing information about crop pests common to your area. These sheets will include insect appearance, life habits, damage, and control. They will serve as a continuing textbook.

MONTHLY INSECT CONTROL INFORMATION SERVICE — NEW PROMOTIONAL AIDS—Current insect control information will be provided on a continuing basis through a monthly newsletter. There will also be many profit-making promotional aids. Participating dealers will receive advance copies to stay ahead of competition.

OTHER IMPORTANT FEATURES—By participating in the Heptachlor program, you will receive a free listing in any Velsicol advertising run in your local areas. Your name will also appear on a reference list of dealers that will be sent to farmers who request the name of a source for Heptachlor formulations.

SIGN UP FOR THE 1958 HEPTACHLOR INSECTICIDE PROGRAM NOW — MAIL THIS COUPON TODAY!



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PARATHION	METHYL PARATHION	GIBBERELLINS

VELSICOL CHEMICAL CORPORATION

C-28

330 East Grand Avenue, Chicago 11, Illinois

Please sign me up for the 1958 Heptachlor Insecticide Dealer "Sales-BUILDER" program.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____



Doing Business With

Oscar & Pat



Oscar Schoenfeld, busier than he had been for several years, looked up from his desk and became angry when he saw his partner, tall, blue-eyed Pat McGillicuddy, reading a magazine. And an organic gardening magazine at that. Since Tillie Mason had left the company, Oscar and Pat had had trouble getting a suitable replacement. Most girls in the village didn't want to work in their home town; they preferred the city. And married women who needed part time jobs refused to work for what they considered small wages. Pat was willing to pay going wages for a bookkeeper but not Oscar. He was looking for a real bargain, wage-wise. And until they found that kind of person Oscar had taken on all the bookkeeping and office chores.

"Ach," Oscar said finally, "here we are so busy and you read that old organic magazine. Why don't you total up the collections and get after them? Don't just sit there."

Pat grinned, but his face got a little red. "Well," he said, "somebody has to take time to think in this business."

Oscar looked puzzled as if he didn't get the meaning, which he didn't. His mind was too full of discount matters. "Ach, those organics!" he snapped. "They make me mad. They don't like this fertilizer. They don't like that pesticide. What the heck do they like?"

Pat shrugged. "Well, it's a free country, Oscar, even if we don't act fast enough to produce sputniks. Every man and woman can have his say, no matter how long it holds up progress. Maybe that's best in the long run. Prevents us from doing a lot of cockeyed things too quickly. Now these organics. I've looked at a lot of the ads in this magazine. I actually think, Oscar, that maybe we should put some of these products in our store, and offer them for sale. Might be good business."

"What!" Oscar got so mad he stopped figuring. "Have you gone crazy, McGillicuddy? Have you forgotten, ach, that we chased one of those fellows out of here a couple of months or so ago?"

Pat laughed. "You forget it was Tillie who chased him with a hand sprayer. He was accusing us of poisoning all our customers. He was a radical, all right. I don't think all organic farmers or gardeners are that radical."

"And you want to do business with fellows like that?" Oscar asked sarcastically. "Fellows that go around and knock what we sell?"

"They'll knock us whether we sell some of their products or not," Pat said sagely. "Now look here. In this magazine, ads about power mowers and garden tractors are run. We sell both. I would just as soon sell a garden tractor to an organic farmer as to any other farmer or gardener. What's the difference?"

"Ach, I wouldn't, Pat," Oscar growled. "Those organic gardeners would want to pay you off in, in organic compost or something."

Pat shook his head. "We want cash or installment plan, Oscar. Now those organics need shovels, rakes and hoes, don't they? How else can they turn their soil? They want plant covers, they want seeds, too, and lots of other things we got."

"Ach, but I don't like the idea of those knockers comin' in here!" Oscar growled. "I don't like it."

"Their money is as good as anybody else's. We haven't the right to tell them what to think or what to buy. As I said, Oscar, they are not

going to buy commercial fertilizers and pesticides from anybody, but they are going to buy a lot of stuff like garden tractors, tools, seeds, etc., that we already got."

"But they can go elsewhere for those things."

"Sure," grinned Pat, "but if we have an organic department—a small one—we can carry organic compost, dried manure. Many feed and garden stores carry that now. We can carry sunflower seed meal. It sells for 5 lb. for \$6. What a price, and what a markup, Oscar. Then there is brewers' yeast, one pound for \$3.50."

"Brewers' yeast!" thundered Oscar. "Edmund Storck that owns the Old Mill Brewery has got lots of it. He belongs to my church. I can buy a barrel of that stuff for a song from him."

"Okay, let's buy a barrel and sell it at \$1 lb.," Pat smiled. "Look. A lot of the things advertised in this magazine, we have already. And we stock Norwegian Kelp Meal. That's for animals, it says."

"Norwegian Kelp Meal!" exclaimed Oscar. "Then the Swedes won't buy from us. They don't like Norwegians. Arne Erickson over on Norwegian Road says that if anybody there sells to a Swede he is going to retire and go to Arizona to live."

"All right, we'll strike off Norwegian Kelp Meal for the time being," Pat said. "We'll be realistic."

"Ach," Oscar said disgustedly, "all this sideline stuff makes me sick of the business. And them bird supplies, garden ornaments, dinner bells. Fer-

tilizers and pesticides—that's what we should stick to."

Pat shook his head. "No, Oscar, this is a changing world. Almost every community now has two classes of customers for a farm supply store—the big scale farmer, and also the small acreage gardener and the homeowner. There is money for us from both types, and we are foolish not to get some of it."

"But those organics," protested Oscar. "I don't like the idea of them coming in here and telling me our fertilizers are no good."

"Well," Pat said, "you can stand up for your rights, can't you?"

"You bet I can," Oscar said sharply.

"The amount of organic stuff we will stock will be small," Pat said, "and our volume on that may not be very big. But the related sales in garden tractors, tools, seeds and other things will be high."

Oscar's lips went tight. "I don't like it, McGillicuddy. Why don't you buy me out? Then you can run the business anyway you like, and I go get my own business someplace else."

Pat's face got red. "I haven't the money, Oscar. My oldest girl is taking music lessons, the next youngest is having her teeth straightened and the 10-year-old girl is next with her teeth. My big family keeps me broke."

"Yah," Oscar said acidly, "there are two kinds of farmers—the kind we sell to—and the organics. There are two kinds of fertilizer dealers, too, and I am glad I'm the best kind."

New Mexico Vegetable Growers Show Growing Interest in Soil Nutrition

LAS CRUCES, N.M.—A rapidly-increasing interest in soil nutrition and insecticides was evident here at New Mexico A&M College's recent two-day fruit and vegetable short course. The need for product quality and uniformity is urgent now that more and more of the state's producers are switching from the standards of local markets to the standards set by the highly competitive but more profitable national markets.

In years past, most New Mexico fruit growers sold ungraded produce to itinerant truckers and they were vulnerable to low prices and occasional lack of markets, it was reported. Now, however, packing plants are operating or are being organized in a number of orchard areas, and growers are learning that investments in fertilizers and insecticides pay off in high-grade produce.

Also, as more and more land is retired from cotton production, more farmers are turning to lettuce, melons, and other high-value vegetable and fruit crops. High fixed charges—incurred when farmers invested in irrigation wells and land levelling for cotton crops—will probably force more idle cotton acres in vegetable production.

These trends were reflected in a record attendance of 150 producers and marketing people at the short course and in the growers' announcement that they will form a State Vegetable Growers Assn. in the near future.

"Better insect and disease control is one of the keys to producing higher quality fruit," a short course speaker told the group. Dr. Phillip J. Leyendecker, head of New Mexico A&M College's department of agricultural services, added that the diseases of

economic importance to New Mexico fruit growers are powdery mildew, cytospora canker, fire blight, chlorosis, and apple measles.

Mohsen Nour, assistant horticulturist with the college's Middle Rio Grande Substation at Los Lunas, said: "Nutrition is the most important single factor affecting fruit tree growth and production. But, if other cultural practices such as thinning, pruning, and spraying are neglected, then the correct nutrition program by itself will not make growing a profitable and paying business."

Entomologists John J. Durkin of the college's Extension Service and Leslie Clayshulte of the Agricultural Products Co., Anthony, emphasized that chemicals are an indispensable tool for the control of insects for fruit and vegetable growers who wish to produce high-quality products.

Dr. H. E. Dregne, professor of soils at New Mexico A&M College, told vegetable growers that one of the worst production hazards along the Rio Grande is salt. "We estimate," he said, "that at least 100,000 acres of irrigated land in New Mexico contains excessive amounts of salt and sodium. And the problem has become worse during the last few years because of the poor-quality well water which we have had to use in place of good river water."

Summarizing new procedures in marketing of fruits and vegetables, L. G. Foster, chief marketing specialist with the U.S. Department of Agriculture, Washington, said: "Production on a hit and miss basis has impeded progress in marketing. Growers and shippers must adapt their production and marketing programs to the desires of consumers."

Colorado Farmers Spend \$1, Net \$23 On Insect Control

FT. COLLINS, COL.—For every dollar spent on insect control in 1957, Colorado farmers realized a return of \$23. That's what entomologists with the Colorado Agricultural Experiment Station reported recently in their year-end survey.

The survey shows that growers of potatoes, tomatoes, wheat, lettuce, corn and beans spent a total of \$1,084,000 to prevent insect damage. With this investment, farmers gained an estimated \$23,368,000 in value of undamaged crops.

On the other hand, insects attacking unsprayed fields caused losses in excess of \$7,000,000. Greatest losses were suffered by growers of potatoes and field corn.

Heading the list of principal insect pests for 1957 is the potato psyllid, attacker of potatoes and tomatoes. This insect was also high on the list in 1956.

In second spot is the grasshopper, which jumped from sixth place on the 1956 list. Still a large threat in eastern Colorado, grasshoppers have damaged rangeland, forage crops and cereal and vegetable crops.

Third place is shared by three species of cutworm—army, variegated and pale western. They made attacks on wheat, corn, sugar beets, alfalfa and beans.

Other insect pests in order of importance are as follows:

4. Loopers (primarily alfalfa, lettuce and cabbage loopers)—damaged lettuce, cabbage, peas and alfalfa.

5. Aster leafhopper—damaged potatoes, tomatoes, lettuce and celery.

6. Aphids (mainly potato and green peach aphids)—damaged potatoes and celery.

7. Corn earworm (also known as tomato fruitworm)—damaged field and sweet corn and tomatoes.

8. Fall armyworm—damaged field and sweet corn.

9. Mexican bean beetle—damaged dry and snap beans.

10. Maggots (primarily onion, seed corn, western wheat stem and sugar beet root maggots)—damaged onions, field and sweet corn, sugar beets and wheat.

California Field Crop Value Down in 1957

SACRAMENTO—Lower prices and higher production of California field crops during 1957 combined to create a total value of \$799,503,000. This was 4% less than the year before but substantially above normal.

The California Crop and Livestock Reporting Service said prices were lower than 1956 for all crops except wheat, rice, beans, cotton, sweet potatoes and hops. The yield was above average for all crops except alfalfa hay and hops—plagued by aphids and downy mildew, respectively—and record high yields were set for barley, cotton, late spring potatoes, sugar beets and flaxseed. The principal reason was good growing weather.

In terms of value, cotton production of \$303,000,000 continued to lead all other state crops by a wide margin. Others of the top five, excluding livestock, were hay, grapes, citrus and tomatoes.

Grain tonnage reached a new high for 1957, caused by record crops of corn, barley, grain sorghums and oats. Corn for grain production reached 335,000 tons, barley an all-time high of 1,880,000 tons and grain sorghums 350,000 tons.

LAND VALUES UP

PORTLAND, ORE.—Oregon farm land values have again hit a peak while farm numbers are the lowest in 30 years, according to Elvera Horrell, Oregon State College agricultural economist.

OVER THE COUNTER

(Continued from page 9)

three times. He also sprays a sizable acreage of pinto beans and alfalfa. At one time this summer during a heavy infestation, his pilots were over 700 acres behind in their work.

Mr. Higdon, who is 27, is well-qualified by training and experience to make a success in this field. Reared on a farm, he graduated from New Mexico A&M College, then spent two years working for a major feed company. He then spent two years as a cattle owner in Mississippi, before coming to Deming.

He and his father-in-law, A. W. Spier, bought the store and are partners. Mr. Higdon is manager of the firm and does most of the promotion work, while Mr. Spier spends most of his time taking care of customers and managing the routine affairs of the store.

The store has become a social and business center for many farmers in the area. They use the large bulletin to advertise items for sale or to list their labor needs. Quite a few come to seek advice about insects, crops and livestock.

The store had a busy 1957 in selling fertilizer. There is about 34,000 acres in cultivation near Deming, with 13,000 of it planted to cotton. Practically all the cotton land is fertilized, while beans, alfalfa and other crops require a certain amount to make good yields.

Mr. Higdon says there is a trend toward higher analysis and water soluble fertilizers, with anhydrous ammonia sales steadily increasing. Some farmers are beginning to put the fertilizer in irrigation water to save cost

and trouble of field application.

The partners have a nice garden and lawn supply business now, which brings in many of the town people. They find that impulse buying is high in this department.

One reason customers buy these items here is because of the information and service given by the store. Mr. Higdon is always eager to help a customer who is in doubt about a purchase. He has a thorough knowledge of feeds, seeds and farm chemicals, and can readily identify any insect brought to him. By following his advice, the customers have derived good results and always come back for future purchases.

Mr. Higdon says the store's success is due mostly to keeping in stock whatever the farmer needs. There are also several other reasons which he modestly refuses to admit. One of these is his eagerness

and sincere desire to help the agriculture of the community. He knows almost every farmer in the valley and spends much time visiting them and driving or walking over the crops.

He also works closely with the county agricultural agent on many kinds of farm problems. He keeps abreast of the fast-changing agricultural chemical field by extensive reading and talking with entomologists. Being on friendly relations with the professors at his alma mater in nearby Las Cruces has enabled him to learn the latest developments in several agricultural fields.

"It's the kind of business I always wanted to own," he says. "Maybe that's why I have so much enthusiasm for the job. When a farmer picks three bales of cotton per acre, it's a nice feeling to know that we had a part in it. If we can help him make money, then everybody shares in his good fortune."

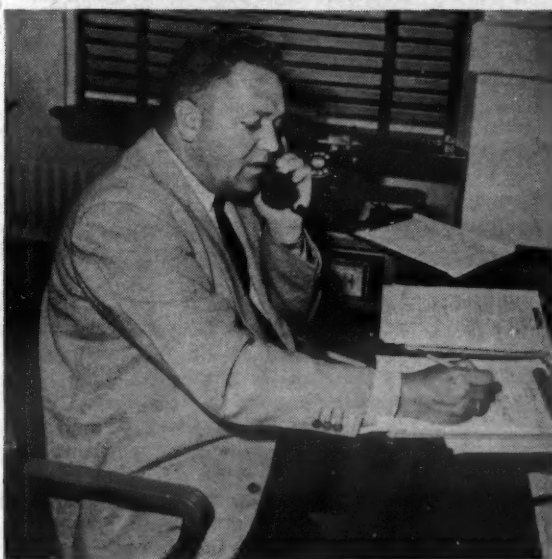


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What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

The Western Cooperative Spray Project Conference was held at Portland, Ore., as was the fifth annual Northwest Agricultural Chemicals Industry Conference. Speakers emphasized the high cost of research that must be part of developing a chemical for agricultural use.

The annual pesticide school at North Carolina State College, held in January, heard talks on insect control problems, and a plea for closer cooperation between colleges and the pesticide industry.

Sinking of a potash mine shaft in nine months set a record when the Farm Chemical Resources Development Corporation's new mine was sunk in New Mexico. The shaft's maximum depth was 1,697 feet.

A new fertilizer firm, Basic G Industries, Inc., started operations at Houston. Plant capacity is 60,000 tons a year. The output will be distributed through 150 dealers.

The American Medical Assn. proposed a new model law covering labeling of "dangerous" chemicals. The proposal was a start toward uniformity in all states.

"Pest-O-Rama," a two-day pesticide conference at Montgomery, Ala., attracted thousands of people from the state to see exhibits, listen to talks by entomologists and others in the insecticide trade, and to learn more facts about the importance of pest control.

The Weed Society of America in its January meeting at Memphis, reported that weeds cost the American economy some \$5 billion annually. Some 35 million acres were sprayed for weed control during 1957, the convention was told. Of this total, some 12 million acres were in corn. Dr. A. S. Crafts, University of California, Davis, was named president of the National group.

Iowa reported that only 7% of the farmers in that state applied insecticides to control corn borer, whereas 88% of the Iowa crop was infested with the insect. Another "severe" infestation was predicted for the 1958 season.

The value of early season control of cotton-infesting insects was stressed at the Mississippi Insect Control Conference held at State College, Miss.

A \$200,000 superphosphate plant near Littlefield, Texas, was begun in January. It will be known as the Caprock Fertilizer Co., owned by Longhorn Construction Co., Sulphur Springs, Texas.

A new relatively non-toxic insecticide was discovered by USDA workers. It was claimed to have less toxicity than either pyrethrum or allethrin, but was slower in "knockdown" of insects.

Connecticut Valley tobacco growers have found their market for high grade leaf products to be drastically reduced because of new methods of cigar manufacture in which high quality plants are not necessary.

The Food and Drug Administration denied application for setting a tolerance of methoxychlor residue in milk. Thus, the product will not be used as a space spray in dairy barns, but may be dusted on cattle.

The U.S. Department of Agriculture struck back verbally at the charges made in a New York Times editorial that USDA was acting in an irresponsible manner in the fire ant eradication campaign. A spokesman for the Department said that domestic Tom cats killed more birds than would this entire campaign. The USDA also denied that it was "plunging ahead blithely" as the newspaper said, and declared that the entire program was planned with the cooperation of conservation and zoological officials and representatives of the fish and wildlife service.

Dr. S. N. Fertig, Cornell University, was elected president of the Northeastern Weed Control Conference at the group's annual meeting in New York. Jack Dreessen, herbicide expert for the National Agricultural Chemicals Assn., Washington, briefed the group on legislative and statutory limitations on the use of herbicides.

The U.S. Bureau of the Census reported that production of anhydrous ammonia during October, 1957 was greater than that of the same period of the previous year. Other chemical products showing gains over October, 1956, were ammonium nitrate, lead arsenate, nitric acid, phosphoric acid, and sulfuric acid.

Plans for the erection of a new superphosphate manufacturing plant in Canada were announced by Dominion Fertilizers, Ltd. at Port Maitland, Ont. The plant was expected to be producing early in the summer of 1958, the announcement said.

An eleven-man committee which had been making a ten-month study of TVA's fertilizer activities recommended that the big government agency should reduce its output of fertilizers to a point more in keeping with its educational program. Conclusions arrived at by the committee indicated that the TVA should broaden its scope of operations to reduce concentration in some areas where the sale of TVA fertilizers present severe competition to the commercial trade; that qualified use of TVA materials on the farm should be clearly of an educational nature, and that educational activities should be evaluated and supported on the basis of their merits in education, without regard to plant production capacity.

Big infestations of grasshoppers were found on over 18 million acres of rangeland in Texas, California, Montana, Colorado and parts of other states. A survey by USDA indicated that outbreaks requiring organized control efforts are likely to occur in 1958.

The cotton crop of 1957 was reduced by some 12% due to plant disease activities, the National Cotton Council reported. The 1957 disease toll was more than 1.5% higher than the average of losses for the period 1952-56, it said.

A good year as a whole was foreseen for the chemical industry in 1958. The Manufacturing Chemists' Assn., Washington, said that sales should total a record \$24.4 billion for 1957, and an additional 5% boost for 1958 is foreseen.

Grace Chemical Co. named Dr. J. D. Aughtry as manager of agricultural services. He will assist the sales force in solving technical problems.

California Owners Proud

Nearly Defunct Farm Store On Paying Basis in 1 Year

By Jess Blair
Croplife Special Writer

A nearly defunct farm supply store which was put back into profitable operation within a year is the proud possession of Mr. and Mrs. G. Van Dyke at Redlands, Cal. Within three months after acquiring the store it had gained sufficient momentum to prove to the new owners that they had not made a mistake in purchasing the property. Now business is so good they will soon have to hire additional help.

How did the Van Dykes go about revitalizing the store? Here's their experience:

The main business had formerly been feeds, but the Van Dykes decided to expand their merchandise lines and capture the urban market, too. They completely revamped the store, installed attractive island and wall displays, added a full line of farm chemicals, lawn and garden supplies and many other farm-used items.

Later Mrs. Van Dyke decided tropical fish and pets could be placed to advantage in an empty room. Almost overnight this department began paying its way. One of the big sellers has been white fan-tail show pigeons. Canaries run a close second. The store also sells guinea pigs and parakeets. Another idea of Mrs. Van Dyke's that paid off in attracting customers was to put a pet monkey in a cage just outside the store.

"I thought the children might like the monkey," she said, "while the parents were busy shopping."

Though the fertilizer and insecticide business with farmers is not large, the sales are steadily increasing. Bagged fertilizer is emphasized.

"We are getting the business of small farmers," Mrs. Van Dyke says. "There are many people in this area who live on just a few acres and work at outside jobs."

The Van Dykes had formerly operated a farm store in upstate New York, but after several years had to move to a drier and warmer climate because of his asthma. They decided on southern California. In acquiring the business at Redlands, they got little more than an empty building on a side street.

They started out using the same technique that had brought nice profits in their previous business. Mr. Van Dyke is a graduate in agriculture from Pennsylvania State University and had spent many years in agricultural work.

First, they re-arranged everything in a way that would add beauty and convenience, and they began to stock items that every farmer and home owner needs. They set up departmental displays so that customers could find what they wanted and wait on themselves.

"Another advantage of this," Mr. Van Dyke says, "is that a customer buying a garden hoe will see some packaged fertilizer, weed killer, plant food and other things that are needed. Yet if they had not been in sight, he might forget them and later make the purchases elsewhere."

One of the standing rules of the store is that everything must be in place and kept neat. Mrs. Van Dyke, when not waiting on customers, spends much of her time re-arranging things with an eye for beauty and ease of shopping. She also sees that everything is kept free from dust and litter.

They have added a large bulletin board where people may advertise

things they have for sale or want to buy. In the front of the store in sight of everyone entering, they have the tropical fish bowls. Just behind these and in a glass enclosed room are the pets. So every customer must pass these eye-stopping displays upon entering and when leaving.

"One of our best outlets is to the people who work in the large canneries," said Mrs. Van Dyke, "and there is considerable rush after 5 p.m. from these people."

"There is a way to make a small store profitable, and that is to departmentalize it, handle the same things the large department stores and some of the drug stores handle, and adopt their methods," say the Van Dykes.

"One advantage such a store has over the department store is that the owner can give more personal service. If he is experienced in agricultural products, he knows what product will best kill insects, what to do for a fruit tree fungus, and how much fertilizer to apply to any type of crop."

The Van Dykes feel that this knowledge and personal service help in attracting people. This has been proved many times. For instance, a woman comes in and says her lawn grass is not growing well or the tomato vines are covered with green worms. She is after just one thing—something to cure this problem.

It may take 20 minutes of the owner's time for a 50¢ sale, but it may be a very profitable sale, according to the Van Dykes. By having all types of garden and lawn supplies arranged where the lady will see them, she may decide to make several purchases. Quite likely she will become a regular customer if the recommended product gets the job done.

"I'm sure these ideas pay off," Mrs. Van Dyke says. "It happens every day, and the impulse buying is very high. So we try to lure customers into the store with the monkey, the pets and the nice displays. Then we give them the information they need and make the sales."

Another method copied from the large department stores is an all-cash type of business. Some of the farmers buying products on the route sometimes wait a few days before paying, but practically all store sales are for cash. This custom is also paying off.

The Van Dyke store is beginning to attract favorable attention from other dealers and salesmen in the area. One district salesman, Allen Stacey of Redlands, says the store has made faster progress than any of the dozens he visits.

"They started with nothing," he says, "in taking over a business that had failed. It was put on a paying basis in just a few months time, and business is increasing every week. Regardless of trends, the small store can survive if operated like the Van Dykes are managing this one."

OREGON RANKS NO. 1

PORTLAND, ORE.—Oregon ranked first among the states in 1957 in the production of filberts and snap beans for processing and second in the production of pears, prunes, sweet cherries, hops, English walnuts and mint for oil. This is revealed in a rating of the states made by the Oregon department of agriculture from USDA production figures.



FARM SERVICE DATA

Extension Station Reports

Oregon mint growers can "kill two birds with one stone" in their spring spray programs to control weeds and mint rust, report Oregon State College agricultural experiment station researchers.

Karmex DW, the new chemical weed killer, and dinitro amine for control of mint rust can be mixed in the same tank for effective control of both weeds and rust, say C. E. Horner, plant pathologist, and W. R. Furtick, agronomist, at Oregon State College.

Two to three pounds per acre of Karmex DW, depending on soil type, and 3 to 4½ lb. of dinitro amine mixed with 30 gallons of water gave excellent control in tests when applied before mint shoots emerged in the spring, the researchers said. They caution against applying the spray after mint emerges.

★

A University of California turf expert has found a control for kikuyu, the fast-spreading weed grass that ruins lawns and stops lawn-mowers.

Victor B. Youngner, assistant horticulturist on the Los Angeles campus, recommends a Dalapon spray at four to five ounces per 1,000 square feet to beat down the pest of golf courses, cemeteries, parks and home lawns.

Repeated applications over a six-month period may be necessary to keep kikuyu from springing up again, he warns.

Kikuyu is not only tough enough to halt a home mower in its tracks but also has turned out to be a prolific seed producer, Mr. Youngner found in recent studies. The seed spreads far and wide, probably carried on the feet of golfers and mower operators.

A wild grass perhaps originating in East Africa, kikuyu was introduced in Southern California about 20 or 30 years ago as ground cover for football fields and for soil erosion control.

★

California walnut growers who missed the chance to control soft scale insects last summer can still take advantage of dormant-season treatments to keep the pests in check.

This is the advice of A. E. Michelbacher, professor of entomology on the Berkeley campus of the University of California.

"The grower must look hard to see the tiny scales, usually found on the undersides of the twig growth on his dormant trees," Prof. Michelbacher says.

"But if he overlooks or ignores them now, his orchard may be in trouble in the spring. Scale attacks can seriously interfere with the vigor of the trees."

Winter treatments should be made after fall leaf drop but not later than the end of February. In late February or March, after the scales cast their skins, treatment is no longer effective. Scale growth then becomes rapid, and the scales produce quantities of honey dew. It's in this period (but too late) that growers usually become aware of the scales' presence.

For winter treatments to control frosted scale, Prof. Michelbacher recommends application of 25% wettable parathion at 5 lb. per acre. To insure control of European fruit lecanium and calico scale, a suitable oil emulsion (from two to four gallons per acre) should be added to the parathion. These materials can be applied with an air-carrier sprayer in from 100 to 200 gal. of water per acre. But the oil should not be applied if the

trees are dry or have suffered from a lack of water at any time during the year.

Scale control is easiest (and most economical) in July and August, the entomologist points out. Parathion applied then at two pounds per acre will take care of all three scale species.

But there's one bonus from the winter control treatment; parathion applied in the winter will destroy the eggs of the walnut aphid and leave the orchard relatively free of this pest until the aphids migrate in from other locations.

★

Tests conducted jointly by biologists with the Colorado Agricultural Experiment Station, U.S. Fish and Wildlife Service and the Rocky Mountain Forest and Range Experiment Station, U.S. Forest Service, show that spraying rangeland with 2,4-D gave 87% control of gophers.

Dr. Richard S. Miller, project leader for the experiment station, said it is not yet known how the herbicide acts to reduce the number of pocket gophers. Further research may produce the answer, he added.

A butyl-ester formulation of 2,4-D was applied on some 2,000 acres of rangeland on the western part of Grand Mesa, located in Mesa County. Spraying was done by airplane with diesel oil acting as the herbicide carrier. Rate of application was three pounds of acid per acre.

Ten one-acre plots were selected for sampling of vegetation and gopher numbers before and after treatment by 2,4-D. Five plots were located within the area to be treated, while control plots were some distance away.

Within a year after treatment, gopher numbers on the control plots increased 9%. On the sprayed areas, however, populations decreased by 87%. Analysis also showed more grass and fewer weeds as a result of the spraying.

If future tests confirm the first year's results, the 2,4-D method can be beneficial in two ways, Dr. Miller said. These benefits are (1) gophers may be controlled at a much lower cost than the present poison bait methods, and (2) rangelands will be improved for grazing livestock.

★

We need "imagineering" to solve our water problems, speakers told 150 conferees at the recent second annual New Mexico Water Conclave held at New Mexico A&M College.

R. R. Aston of the Southspring Foundation, Roswell, said the "problem is not only a problem of today but a problem of tomorrow. It will require not only engineering but imagination. It must be approached in a constructive and positive manner. Solution," he said, "is not to be found in generalities and platitudes."

"Southspring Foundation urges New Mexico to undertake a complete water study, including an accurate inventory of its surface and underground water resources; an estimate of present and future water requirements, including an appraisal of domestic and industrial uses contrasted with agricultural uses; and to outline a comprehensive and effective water conservation program. Such a survey would help us to determine the actual composite water situation in our state and give us a better idea



WESTERN GROUP ELECTS—The annual Western Cooperative Spray Project conference at Portland elected three of these men to lead the group during the coming year. New secretary is A. A. (Tony) Horn (from left) Boise, University of Idaho extension horticulturist. Others are H. F. Madsen, Berkeley, University of California entomologist, chairman; C. O. Barnard, San Jose, executive secretary Western Agricultural Chemicals Assn., and Ralph S. Downing, Summerland, B.C. entomologist, Canada Department of Agriculture, co-chairman.

of what needs to be done," Mr. Aston added.

The viewpoint of another private foundation on water problems was expressed by C. L. Forsling, director of the Pack Foundation, Albuquerque who said, "A major need in New Mexico, as in most places, is informing citizens of their water problems in order that they may develop adequate

programs and policies to follow. This conference is an example of informing the public. In recognition of this educational need, the Pack Foundation has allotted three-quarters of a million dollars to be used mostly in New Mexico and Arizona during the next few years, chiefly for a program of information and education on watershed and related programs."

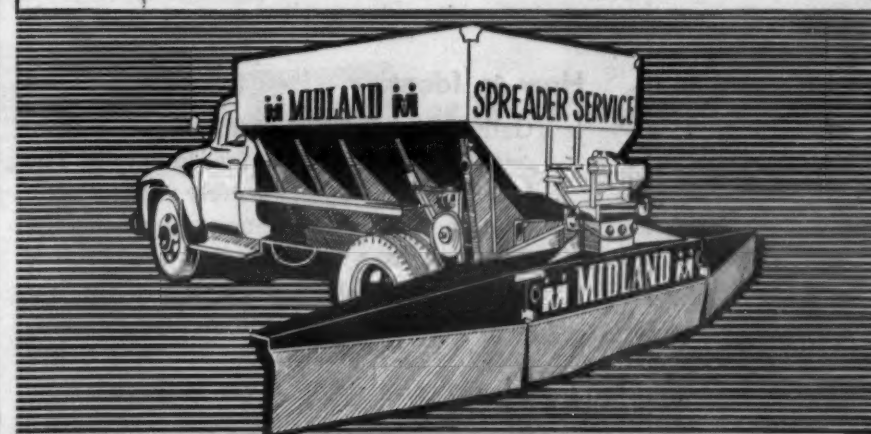


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WEED OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board

Galinsoga

(*Galinsoga parviflora*)



How to Identify

Galinsoga is a leafy plant, growing from one foot to about three feet in height. The leaves are opposite, sparsely rough-hairy, oval to lance-shaped, pointed at the tip, thin, and from 1 to 2 inches long. A native of tropical America, the plant has become naturalized and occurs in door-yards, waste places, and lowland fields, especially in damp areas with rich soil. In California, and other places where irrigation ditches are found, the plant grows along ditch banks.

Characteristics of Galinsoga

The plant is an annual, reproducing by

seeds and rooting stems. Its flower heads are small, numerous, and scattered at the ends of branches. Ray flowers are very small, white, and four or five in number, surrounding the small yellow disk flowers. The plant flowers in July-September, and seeds during the same period.

Damage Done by Galinsoga

Actually, the plant is more pestiferous than damaging. Occurring as it does in gardens, yards and in shrubbery, it is not one of the most serious of unwanted plant life.

SALES BREAKTHROUGH SEEN

New Mexico Dealers Urged to Increase Promotion Efforts

SANTA FE, N.M.—More fertilizer promotion at the local level was strongly urged by several speakers at the recent 12th annual convention of the New Mexico Grain and Feed Dealers Assn. here at LaFonda Hotel.

The two-day meeting, which attracted about 120 retailers and manufacturers, was also highlighted by the reelection of Charles B. Boreing of Roswell, president, and Clayborn Wayne of Hatch, vice president.

"Our recently-completed survey strongly suggests that dealers are the ones to make the next big step in increasing the use of fertilizer," said Dr. Robert L. Beacher of Fayetteville, Ark., southwest regional director, National Plant Food Institute.

"Statistics on fertilizer consumption indicate that New Mexico farmers have been markedly increasing their fertilizer usage over the past few years," he continued. "However, we can readily agree that a tremendous potential for more fertilizer usage still exists in the Southwest. Most recent census figures indicate that less than 75 per cent of southwest farmers are using any fertilizer at all, and they are using an average of only a little over one half the amount recommended by agricultural experiment stations.

"A primary step in promoting this usage is a critical evaluation of the factors which influence farmers to use or not to use fertilizer. Such a study was recently completed by National Analysts Inc. of Philadelphia for the National Plant Food Institute."

Dr. Beacher stressed that analysis of results is still underway, but gave these unofficial preliminary findings for farmers of the South and Southwest:

Farmers are influenced by the following personalities, in order of relative importance:

(1) State agricultural personnel, especially county agents with soil test information; (2) Neighbors; (3) Dealers, and (4) Others—a variety of different individuals, including manufacturers' salesmen.

"Since farmers believe authenticated information from their agricultural colleges and county agents, dealers should maintain a close working relationship with the local agent and other community agricultural leaders, and make good use of the leaflets, bulletins and other informational material from the agricultural colleges," Dr. Beacher commented. Returning to the survey results, he noted:

Farmers do not use any—or use insufficient—fertilizer because of:

(1) Weather risks and fear of harmful effects of heavier rates; (2) Lack of sufficient money, and (3) Inability to recognize the need.

Farmers would be most effectively influenced to use more fertilizer by the following means:

(1) Soil test recommendations in clear, understandable terms; (2) Good demonstrations on their own or nearby farms; (3) Reasonable credit terms, and (4) Mass media, especially local, to arouse interest and to reach those who otherwise would not consult usual sources.

"Dealers should help promote the sound soil testing programs of our state colleges," Dr. Beacher stressed. "Dealers should encourage farmers to take advantage of soil testing service offered by the state and to follow through with the recommendations they receive.

"Demonstration activity should be stepped up on a local level, and demonstrations must be popularized more widely through mass media

and personal contact so that more farmers may see the results."

A progress report on New Mexico's on-farm demonstrations was given by Dr. Philip J. Leyendecker, head of agricultural services, New Mexico A&M College. Plant food for the test plots was donated by fertilizer firms. Dr. Leyendecker was able to give the dealers specific fertilizer recommendations for the soils of all parts of New Mexico for such crops as cotton, alfalfa, barley, carrots, grapes, Irish and sweet potatoes, peanuts, pinto beans, pasture grasses, sorghum, sugar beets, tomatoes and wheat.

All varieties except pinto beans and sweet potatoes demonstrated the economic benefit of added plant food. Pinto beans showed no improvement and sweet potatoes showed too much improvement, that is, they split or became too large for market acceptance.

Another state college speaker, Dr. S. C. Vandecaveye, explained the concept of "Living Soil." He stressed that fertilizers, in order to assist plant growth, must be accessible to roots and must not be opposed by excess salinity or other growth inhibitors.

"Soils formed in arid, hot climates—as in many parts of New Mexico—produce comparatively little vegetation during the process of soil formation, and therefore little humus is formed. Nitrogen content is low since nearly all soil nitrogen is contained in humus," Dr. Vandecaveye said. "Salts, released from decomposed minerals, are not leached out because of insufficient rainfall.

"Such arid soils then are usually rich in mineral nutrients, alkaline in reaction, very low in nitrogen, frequently shallow in depth and often rich in soluble salts that may be harmful. Lime content is usually high and often accumulates in the form of caliche which restricts water and root penetration."

Dr. Vandecaveye said that salts may be removed by leaching with extra irrigation water. Removal of excess lime is a more difficult task and should be accomplished with the technical advice of soil chemists. In general, New Mexico soils must be fed with phosphorus and nitrogen, and the "living" qualities must be encouraged through appropriate cultivation techniques, addition of organic fertilizers for humus, and proper water treatment, Dr. Vandecaveye said.

Dallas Rierson, director of the State Department of Agriculture, reported that no Khapra beetle infestations have been found since last summer. He discussed various insect pests that have invaded the nation in the past few years and said that such invaders, plus plant diseases, could be used as weapons by an enemy nation in time of war.

The convention also included talks on feed topics and a number of social events. Clovis was selected to be the site of the association's midsummer meeting.

Dan J. Forrestal in New Monsanto Post

ST. LOUIS—Dan J. Forrestal of St. Louis has been appointed director of public relations for Monsanto Chemical Co., effective Feb. 15, it was announced by Charles Allen Thomas, company president.

Mr. Forrestal succeeds Howard A. Marple of St. Louis, who is taking a leave of absence for reasons of health. Later, Mr. Marple will rejoin Monsanto to handle special assignments for Mr. Thomas. James E. McKee of St. Louis was named assistant director of public relations.

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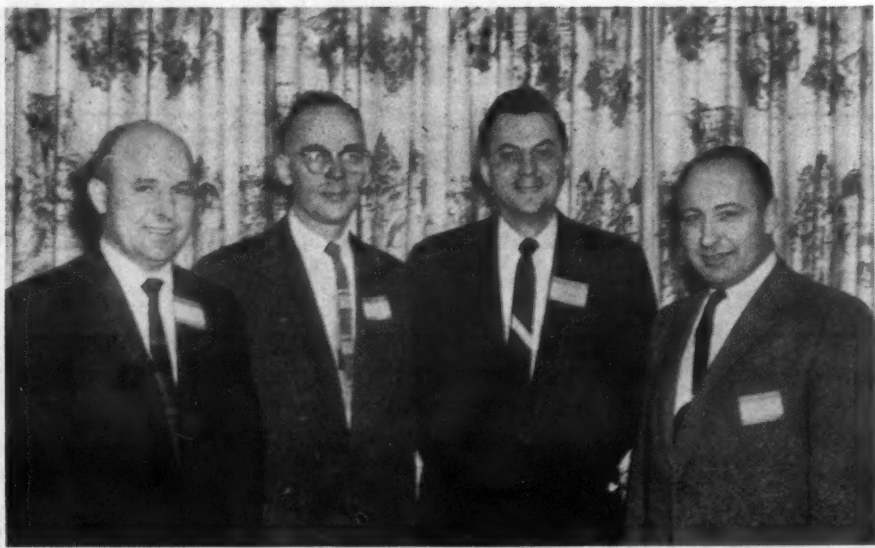
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WILL HEAD WEED SOCIETY—Dr. W. B. Ennis, left, immediate past president of the Weed Society of America, is shown with three of the four officers who will guide the group during the next two years. They are, left to right, Dr. K. P. Buchholtz, University of Wisconsin, vice president; Dr. W. C. Shaw, U.S. Department of Agriculture, secretary; and Dr. W. C. Jacob, University of Illinois, treasurer and business manager of Weeds, society publication. Dr. A. S. Crafts, incoming president, was in England at time of meeting. A report of the meeting appeared on page 1 of the Jan. 20 issue of Croplife.



HANDICAP OVERCOME—Arlene Mueller is pictured at her desk at Bemis Bro. Bag Co. of Minneapolis, where she is a member of the transcribing stenographic pool. Now 20, she began her schooling at the age of nine at the Braille and Sight Saving School at Faribault, Minn., and studied for three months in the dictaphone course at the Minneapolis Society for the Blind. She learned to transcribe dictated material from records on a variety of equipment. Miss Mueller was placed at Bemis through the State of Minnesota Department of Public Welfare.

James F. Sloan Named CFA Director

SAN MARINO, CAL.—James F. Sloan, president of the J. F. Sloan Co., Salinas, was elected to the board of directors of the California Fertilizer Assn. at a recent meeting in San Francisco.

Mr. Sloan's election brings to full strength the twelve man board. Other directors of the association are Jack Baker, Bandini Fertilizer Co., Los Angeles; Lowell W. Berry, the Best Fer-

tilizers Co., Oakland; Fred R. Bryant, Brown and Bryant, Shafter; Frank A. Easton, Sunland Industries, Inc., Woodland; Howard H. Hawkins, Golden State Plant Food Co., Glendora; William G. Hewitt, association president, Pacific Guano Co., Berkeley; Earl R. Mog, Growers Fertilizer Co., Stockton; Arthur W. Mohr, California Spray-Chemical Corp., Richmond; M. M. Stockman, the Mountain Copper Co., Ltd., San Francisco; and John N. Williams, General Fertilizer and Supply Co., Chula Vista.

Oregon Dealers Told of Decline In Soil Samples

PORTLAND, ORE.—Approximately 150 dealers and fertilizer manufacturers attended the recent annual Dealers' Day Fertilizer Conference at Oregon State College, sponsored jointly by the soil department of the college and the Pacific Northwest Plant Food Assn. The day's program was an educational one, aimed at fertilizer dealers and was non-technical in scope.

L. A. Alban of the college pointed out the decline in the past two years in the number of soil samples received at the college for analysis. The soil testing program, started in 1953 on a small scale, increased 133% in 1954 and another 16% in 1955 over 1954. However, it dropped 2% in 1956 and 7% in 1957. One county dropped 20% in 1957, but Polk County showed an increase of 22%.

John Hanson, county agent of Polk and Walter Steele, fertilizer dealer in that county, gave the reasons for the increase.

Two years ago, Mr. Hanson invited the nine fertilizer dealers in the county to a meeting. These dealers, in cooperation with Mr. Hanson, staged a one day meeting, inviting all farmers in the area to attend a field day. A free lunch was served at noon to over 200 farmers in the area. Dealers did the financing necessary for the field day, while Mr. Hanson set up the program.

The success of that farmers' day resulted in another one a year ago. This year it is intended to expand into a two day session and arrangements are already under way for the event.

Mr. Steele explained the part the dealers had in getting out notices to the farmers and in financing. Mr. Hanson attributed the 22% increase in soil samples almost entirely to the farmers' day program.

Texas Tech Chemical Conference Scheduled

LUBBOCK, TEXAS—Authorities on the use of chemicals in West Texas farming operations will meet at Texas Tech Feb. 25-27. The conference has been planned primarily for the agricultural chemical dealers, distributors, processors and manufacturers, Dr. Donald Ashdown, Texas Tech entomologist in charge of arrangements, said. However, the meetings are open to anyone interested in these chemicals, their distribution and use.

Sponsoring the fifth annual agricultural chemicals conference are Texas Tech, Lubbock Chamber of Commerce, West Texas Chamber of Commerce and the A&M College System of Texas.

Relationship Between Cattle Bloat and Soil Fertility Reported

WASHINGTON—There is reason to believe that there is a definite relationship between bloat in cattle and the fertility level of the soil on which the forage is grown, according to a recent report by H. P. Cooper and H. A. Woodle of Clemson (S.C.) Agricultural College.

This was reported in an article in a recent issue of Plant Food Review, a publication of the National Plant Food Institute, Washington.

The authors said that experience in South Carolina and observation elsewhere indicate that bloat-producing crops only rarely are found on soils maintained in a relatively good state of fertility. They said no acute bloat in South Carolina has occurred on any of hundreds of pasture demonstrations where farmers are following closely the recommended liming and fertilization practices.

These pasture demonstrations are properly limed and fertilized annually with approximately 1,000 lb. per acre of 4-12-12 fertilizer or equivalent, plus a nitrogen top-dressing of 100 to 200 lb. per acre.

"It has been observed," the authors continued, "that on practically all farms having lethal bloat problems, little or no phosphate fertilizer has been applied, and soil tests indicate a deficiency of available phosphate in the soil."

"Definite evidence that lethal acute bloat in cattle and other ruminants can be controlled by adequate phosphate fertilization was obtained in 1957 in a comprehensive fertilizer test demonstration on a farm near Marion, S.C."

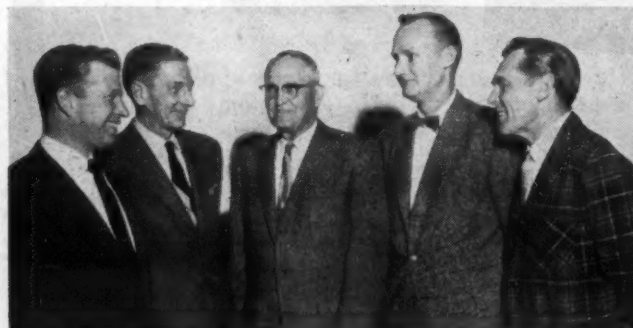
The authors said it appears that the incidence of bloat is dependent upon the ratio between nitrogen and phosphorus and/or the ratio between calcium and phosphorus, either in the animal or the feed or both, rather than upon the absolute phosphorus level.

Studies, they said, indicate that N:P ratios of greater than 11:1 may be conducive to bloat. While a Ca:P ratio of 1.5:1 may be considered standard or ideal, ratios up to 6:1 may be safe if vitamin D is available in sufficient quantities.

Since the phosphorus level in relation to nitrogen and calcium seems to be the controlling factor, it seems possible to prevent bloat in animals grazing leguminous crops by making sure of a high level of available phosphate in the soil.

NEW SOIL TESTING LAB

NASHVILLE, TENN.—A new soil testing laboratory is now in operation by the agronomy department, University of Tennessee agricultural extension service, according to Dr. William D. Bishop, agronomist. The new laboratory has been designed to give more accurate results and faster service on samples received from farmers.



PEST-O-RAMA SCENES—A two-day educational program geared to the needs of farmers, businessmen and others interested in pest control, attracted not only local people to the Jan. 20-21 meeting at Montgomery, Ala., but many from the pesticide trade as well. Some of these are pictured above. At the left are new officers of the Alabama Association for the Control of Economic Pests, elected during the Pest-O-Rama. Left to right: R. J. Smith, American Cyanamid Co., Montgomery, board of directors; George R. Williamson, Agricultural Chemical Service, Montgomery, past president and member of the board of directors; B. P. Livingston, Alabama Department of Agriculture and Industries, president; Dr. W. G. Eden, Alabama Polytechnic Institute



Agricultural Experiment Station entomologist, secretary-treasurer; and N. R. Downey, Hercules Powder Co., Birmingham, vice president.

Second photo: Mr. Williamson, Dr. E. V. Smith, dean and director of API School of Agriculture and Agricultural Experiment Station; Dr. H. H. Golz, associate medical director of American Cyanamid Co., New York; and Charles P. Zorsch, associate manager, agricultural chemicals department, Monsanto Chemical Co., St. Louis, Mo.

The final picture shows one of the educational exhibits at Pest-O-Rama being inspected by visitors at the event.



TRACE ELEMENTS

(Continued from page 6)

search workers which was attended by 17 officers from nine countries of Western Europe.

In the plant physiology section the outstanding achievements have been in the development of the methods for sand and solution cultures for use in micro-nutrient investigations of higher plants. These have entailed elaborate studies on containers and methods of purification of sand, water and chemicals and on special methods of growing higher plants with controlled nutrient status throughout their entire growth cycles.

The results of these studies have been published in book form. The methods, as finally developed, are now being applied to the production of higher plants and micro-organisms for biochemical studies and also to tissue cultures. A special example of the studies relating to higher plants is that of the role of molybdenum in nitrate reductase systems and in enzyme systems involving ascorbic acid. The studies on molybdenum have been linked to field experiments on crops, particularly cauliflower and lettuce, and to problems of soil acidity involving relationships between molybdenum deficiency and manganese excess.

The biochemical studies on micro-organisms have been particularly fruitful of both scientific and practical results. Thus the roles of micro-nutrient metals in all steps of the reduction of nitrate to ammonia (nitrate → nitrite → hyponitrite → hydroxylamine → ammonia) have been elucidated.

The methods evolved in this work and the results obtained are likely to have many applications in microbiology, and are already being applied for various purposes at Long Ashton, for example, in the determination of the availability to plants of micro-nutrients in soils (*Aspergillus* method) and in studies of the enzyme systems involved in fungicide and pesticide/fungus/host plant relationships.

Biochemical studies on haem compounds are essentially of a long-term nature and are directed to the solution of difficult metabolic problems concerning chlorophyll and related compounds.

Investigations in organic chemistry are designed to produce basic data on important groups of plant products of possible importance in biochemical studies of the effects of micro-nutrient elements.

Thus, work on amino acids pointed to the importance of molybdenum in nitrate reduction and this was later confirmed by the discovery of the role of molybdenum in nitrate reductase. Again, investigations on the polyphenolic compounds in apple and pear tissues showed that these tissues could be recognized by special polyphenols—by phloridzin in apple and arbutin in pear. This finding may have important applications in problems of stock/scion relationships, and in taxonomy and the characterization of hybrid species.

Results of investigations on valency states of micro-nutrient elements in plant tissues have been applied successfully in studies of valency changes undergone by molybdenum in nitrate reductase systems.

In the soil biology section, special attention has so far been given to special soil problems in the Gambia. In this work Long Ashton sand culture techniques have been successfully applied to pot cultures of Gambia soils, and the results have opened up a new method of attacking problems of the fertilizer requirements of crops in tropical soils. The new method is being applied in experiments on crops in the field both in the Gambia and other Colonial territories in Africa.

Basin Gross Up, But Per Acre Returns Dip

EPHRATA, WASH.—Crop returns were up but per acre income was down on the 600,000-acre Columbia Basin irrigation project in 1957.

Bureau of reclamation officials report that gross crop income amounted to \$24,552,000 in 1957, 10% greater than in 1956. Crop yields were higher but returns per acre were down \$7 from 1956.

Utilized were 3,158 farm units operated by 1,923 operators. Slightly more than 203,000 acres of the big project were farmed last year. Gross returns were \$120.89 per irrigated acre, 5% below the preceding year.

MANAGER NAMED

JORDAN, MINN.—Kenneth Crane, former agronomist and salesman for Welcome Agricultural Chemical Co., Welcome, Minn., has become manager of the Scott County Farm Bureau Service Co. here.

Texas Farmers Boost Fertilizer Use to Step Up Crop Yields

LEVELLAND, TEXAS (Special to Croplife) — Commercial fertilizers have been steadily increasing crop yields in Texas, according to reports coming in from all parts of the state.

Here in Hockley County, the fertilized acreage totaled only 1,000 acres five years ago, according to Bill Taylor, county agent. In 1957 this figure had increased to 50,000 acres, with fertilizer being applied to cotton and grain sorghums.

P. R. Johnson, superintendent of the experiment station at Tyler, thinks that some farmers can achieve a yield of 250 bu. of corn per acre within the next 10 years with heavy applications of fertilizer, using the best hybrid types and by careful management.

Even native pastures are benefit-

ing from fertilizers and seem to withstand drouths without burning. Such pastures afford higher quality forage and last longer.

Fertilizers are now used on all crops and with good results. In South Texas fertilized buffel grass cut 3,360 lb. to the acre after nitrogen was applied, as compared to 2,800 lb. on an untreated field.

Just across the Texas line at Lovington, N.M., vegetable farmers are using heavy quantities of fertilizer. Henry Hirada, known as the vegetable king of New Mexico, introduced potash to the area, despite the fact that soil tests showed the land to be plentifully supplied with potassium. Mr. Hirada says the tomatoes will stand up under shipping better if extra potash is added.

Many dryland farmers are now using fertilizers of several kinds. In some instances, fertilizer put down during a dry year has enough carry-over strength to increase the yield when the rains come the next year.

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New Corrosion Inhibitor in Ammoniating Solutions Said to Prolong Equipment Life

KANSAS CITY — The corrosion "headaches" of mixed fertilizer manufacturers may have been eased somewhat with the recent announcement of a new line of ammoniating solutions by Spencer Chemical Co.

Significant reduction in the corrosion caused by these solutions is being claimed by Spencer in introducing Spensol Green. According to Spencer, the new line of solutions contains an improved inhibitor which will show advantages in cutting corrosion and prolonging the life of conventional steel equipment.

J. C. Denton, agricultural chemicals vice president, says: "We think that Spensol Green solutions represent a big step toward better ammoniating solutions for the fertilizer mixer. Actually this is the first really new solution development for the past 10 years. We believe that it will result in measurable decreases in equipment replacement and profits lost through enforced 'downtime' due to corrosion failure."

Laboratory tests so far have indicated that the inhibitor used in the new solutions results in at least 40% less corrosion than any of the more than 150 inhibitors being tested. This includes the inhibitor being used in Spensol solutions up until the introduction of Spensol Green.

The 40% less corrosion indicated with Spensol Green cannot be directly interpreted to mean 40% longer service for equipment in

which it is used. Ralph Miller, technical director for Spencer, explains it this way: "Any piece of equipment is only as strong as its weakest link," he says, "and, in most cases, we have found that the 'weak' link, or the place most quickly and vigorously attacked by solution corrosion is the weld bead. If a solution eats through a weld in a tank it makes little difference what condition the rest of the metal is in—the tank is useless."

"In our additive testing," Mr. Miller continues, "we take this weak link into consideration by using a two by three-inch mild steel test plate welded in the middle. Each plate is sandblasted to remove mill scale, weighed and placed in an ammoniating solution containing the inhibitor to be tested. After seven days the plate is removed and weighed again, with the difference in weight being the corrosion loss. It is the most valid test for corrosion we have found. On the basis of it we know that Spensol Green is at least 40% more effective in reducing corrosion than any additive we have tested during 12 years of additive research."

Expressed in terms of inches per year through which solutions will corrode, the following comparison was made: Uninhibited Spensol corrodes away carbon steel at the rate of .350 inch per year, Spensol containing the standard inhibitor eats away at the rate of .017 inch per year, and the new Spensol Green

does away with .011 inch per year.

"Of course," Mr. Miller says, "even with Spensol Green we are not discounting importance of tolerance control in the effectiveness of an inhibitor. We know that close control of the amount of inhibitor added, which means testing every car shipped, really pays off in making the inhibitor effective. Inhibitors are not an item where if a little will do a little good, a lot will do a lot of good—the prescription must be exact."

Users of Spensol Green (the word really contains an extra "e", added for trademark identification) will have to have a visible metering device to prove to themselves that the new solutions do have a definite green color. Spensol Green's color will not affect the color of the finished product but, according to Mr. Miller, "we definitely expect it to help prolong the life of conventional steel tanks, dip pipes, lines and spargers."

WASHINGTON WIRE

(Continued from page 1)

presents the White House with another "stand-still" price support arrangement which it cannot or will not approve, it will get a prompt and stinging veto.

Informed observers here outside of congressional circles now think that there is small possibility of any major farm legislation at this session of Congress. There is some small possibility that within Congress there is a group which may engineer a cotton bill which will increase the acreage for that crop in 1959 and reduce the levels of support at the same time.

It is now forecast that this week USDA will announce a 1958 cotton crop price support at approximately 82% of parity.

Allen J. Ellender (D., La.), senate agricultural committee chairman, has taken the position that he will not accept any price-measure legislation. He says the price support legislation must be all in one package or no game. He has put his package farm price support legislation at the foot of his calendar giving priority to other matters such as extension of Public Law 480 and some specialized farm bills.

Adding confusion to an otherwise badly messed up situation, are proposals from the National Federation of Milk Producers, joined with others who would establish a "do-it-yourself" program for farmers.

This program would provide levels of price support on the basis of established crop acreage or production in terms of pounds whereby quota levels would be established for each farm and his level of support for his share of the crop would be fixed plus or minus as he complied with a limit on his output. The more he reduced his acreage, the higher his level of support—which in some cases would in part be paid in kind. The less reduction in his output the lower of level of support available to him. Sounds interesting, but possibly too complicated for any federal government to administer.

★ ★ ★

Postponement of Freight Rates Seen As Only Temporary

WASHINGTON—Notwithstanding the fact that the railroads with delayed grace gave way to a postponement of the effective date of their request for a rate increase on commodities and class freight as well as increases in certain accessorial charges, the trade opposition has small hope that the postponement from Feb. 1 to Feb. 15 will change the situation in any major sense.

Trade sources here are only

slightly hopeful that in some minor details will ICC ask the carriers to submit their rate increase requests in further oral hearings before the rail proposals are approved.

Everywhere within Washington circles it has been noted that the carriers put on a big publicity show here before the three-day oral hearings on the new rate increase were held before the ICC. The publicity show before Congress heard presidents of leading carriers stating that the major railroads were on the verge of bankruptcy and unless some drastic changes were made shortly by the federal government, those roads would go bankrupt. Immediately following this testimony, annual statements of several major roads showed substantial financial losses last year and the suspension of dividend payments on their common stocks.

It has been learned here from reliable trade sources that many industry groups are in favor of a freeing of the railroads from the strait jacket control of the ICC over railroad tariffs. These spokesmen from industrial groups say they would prefer a return to bargaining on rates by the carriers with shippers and that ultimately the shippers, particularly the bulk commodity shippers, would obtain better treatment tariff-wise under such open market conditions.

Even at USDA rail tariff experts say that if the rails were freed from ICC controls it would mean at least a temporary period in which the shippers would benefit materially. The carriers would be fighting truck and barge competition, but as one USDA official stated, ultimately the carriers would strangle the competition and when such a point was reached they would resort to punitive rates on all types of freight.

The issue is hard to rationalize now. Exponents of a relaxation of ICC controls over freight rates say that potentially the rails are the lowest cost method of hauling bulk freight or long haul freight unless other competitive types of freight are subsidized—a condition which the carriers claim exists now. Exponents of the carriers' position say that if the roads were to be freed from the restraints of the ICC act they would probably regroup into national rail combines which would ultimately produce a more efficient freight pattern, bringing large economies in freight rate charges.

As things now stand under the ICC Act, the commission is compelled to grant freight rate increases mandatory under the law under which they operate. Yet at every turn when the carriers attempt to gain the levels of return they ask they find themselves faced with opposition from every shipping interest in the nation. The carriers' request for freedom from ICC restraints is also vigorously opposed by the trucking interests and the barge operators generally.

BLACK LEAF

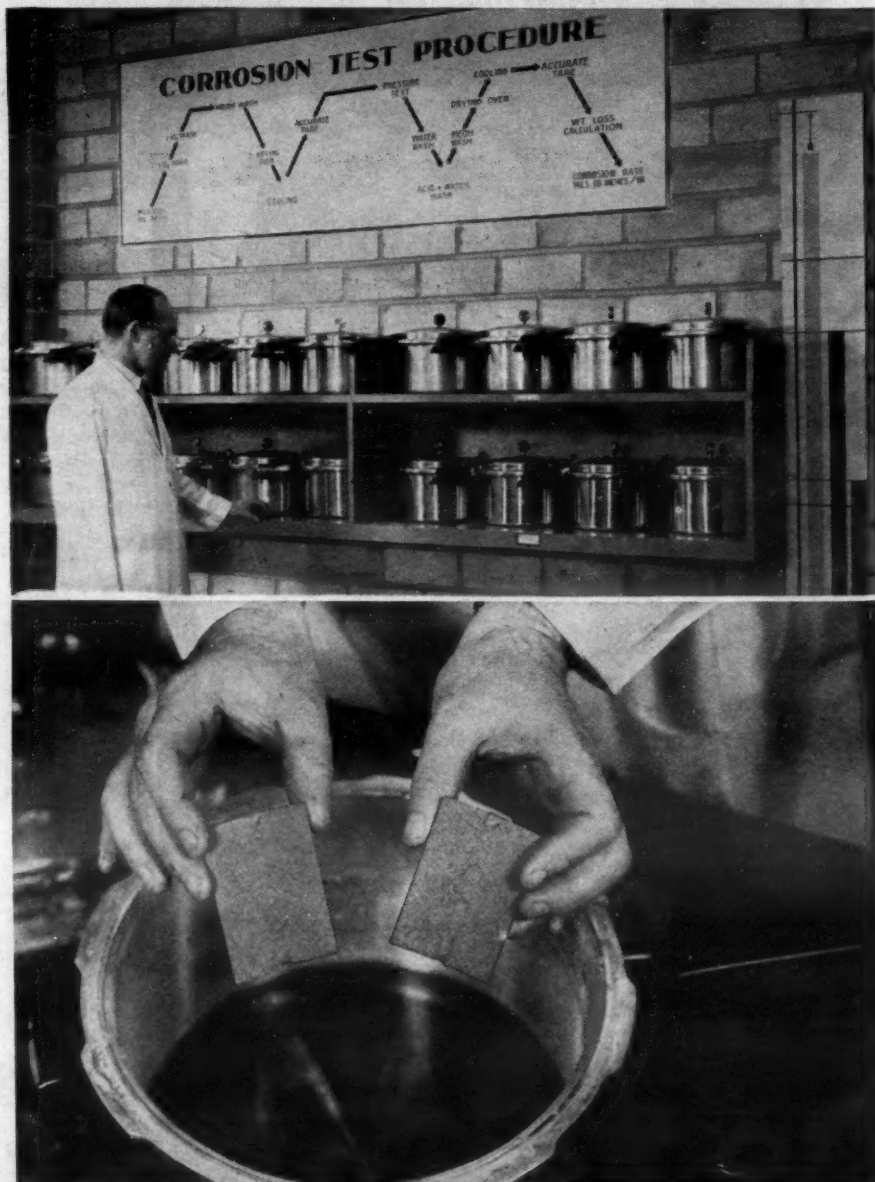
(Continued from page 1)

the Black Leaf trademark and trade-name.

Pending establishment of its manufacturing operations, Black Leaf Products Co. plans to lease a portion of Diamond's plant at Louisville to meet marketing requirements of the spring buying season.

Fredrik H. Raedel, Jr., sales manager of consumer products for Diamond Black Leaf Products, and E. W. Bodensiek, advertising and sales promotion manager, will serve the new firm in the same respective capacities.

Mr. Evans also announced that Diamond has sold its plants at Waco, Texas and Richmond, Va. which were previously used by the company for formulating Black Leaf products.



CORROSION INHIBITOR TESTED—The row of pressure pans in the top photo comprises an important part of corrosion-testing of metals at Spencer Chemical Company's Jayhawk Works near Pittsburg, Kansas. Inside the pans, under 15 lb. pressure, are test strips of mild steel immersed in ammoniating solutions containing a corrosion inhibitor. The test strips are weighed before being placed in the pans for a 7-day period, then are removed and weighed again with the amount of weight loss indicating the effectiveness of the inhibitor.

Elements used by Spencer in testing the corrosiveness of ammoniating solutions are shown in the lower picture. The test plate at left is of lighter color indicating corrosive attack by the solution in which it was immersed. The plate at right has a dull color, indicating less corrosion effect. The plates are weighed before and after immersion for the exact measurement of weight loss. According to Spencer, the results of this test indicate that its "Green" solutions are some 40% less corrosive than other inhibitors tested.



Ben Mills Allen

JOINS U.S. POTASH CO.—Ben Mills Allen has been appointed as sales representative in the southeastern territory for U.S. Potash Co., division of United States Borax & Chemical Corp. Mr. Allen will work directly under Robert H. Walton, manager of the firm's Atlanta office and will be assigned duties in the territory served by that office. Mr. Allen is a graduate of the University of Georgia with a degree in business administration, served with the U.S. army in Germany, and was formerly associated with an Atlanta bank.

NEMATODES

(Continued from page 1)

states — Alabama, Arkansas, Delaware, Florida, Georgia, Illinois, Indiana, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Virginia and Wisconsin.

Various methods were used in inspecting the approximately 750,000 acres surveyed—examining soil for the underground pest, pulling plants to check roots for clinging female nematodes and visually inspecting sample fields for anemic-looking plants and yellowed spots that might reveal feeding of the tiny eelworm.

Varied Program Set For Texas Agricultural Aviation Conference

COLLEGE STATION, TEXAS—Aerial applicators and others interested in their industry will gather from all over the U.S. for the seventh annual Texas Agricultural Aviation Conference and Short Course on Pest Control at Texas A&M College Feb. 16-18.

The program proper will get under way Feb. 17 with a welcome from Dr. M. T. Harrington, president of the Texas A&M College System. Following this welcome, Joseph C. Brusse, head of the college's Aircraft Research Center, will report his organization's progress. After these two talks, the rest of the day will be given over to symposiums on insect control and brush and weed control.

In the Symposium on Insect Control, members of the college's entomology department will participate, with Dr. J. C. Gaines, head of the department, in charge.

Dr. R. L. Hanna will discuss "Cotton Insect Control;" Prof. N. M. Randolph will discuss "Forage Insect Control;" Dr. D. R. King will speak on "Vegetable Insect Control;" Dr. J. R. Brazzel will speak on "Basic Research in Insect Control;" and Dr. F. M. Fuller will discuss "Problems in Insect Control."

Dr. Wayne C. Hall of the department of plant physiology and pathology, will discuss "Defoliants and Dessicants."

The afternoon will begin with a symposium on brush and weed control, with Dr. R. A. Darrow of the range and forestry department as chairman, and speaker on "Hardwood Control for Pine Release." Other members of the panel and their subjects are Wayne G. McCully of the Texas Agricultural Experiment Station, "Fenuron Pellets Applications for Oak Control;" Garlyn O. Hoffman, extension range specialist, on "Pasture Weed Control," and Cecil H. Meadors, experiment station substation at Spur, on "Mesquite and Shinoak Control."

Then the group will split into three sections for discussion periods on insect control problems, herbicide problems, and a closed session for members of the National Aviation Trades Assn.

Charles A. Parker, executive director of NATA, Washington, D.C., will be the banquet speaker, and his subject will be "As We View It From Washington."

The Feb. 18 morning session will feature these subjects and speakers:

"Aerial Applicator Problems," J. K. Medders of San Benito, member, Texas Aerial Applicators Assn.; "Customer Relations, Financing, Banking, Collection," Dr. D. R. Fitch, business administration department, Texas A&M; "Hazards to Humans Resulting From Application and Use of Insecticides,"

Dr. W. L. Wilson, division of occupational health, State Department of Health, Austin, Texas; "Some Legal Aspects of Agricultural Aviation—2nd and 3rd Party Liability," Stuart W. Turner, consulting agrologist, San Francisco, and "Supplementary Type Certificates," Robert M. McKissick, aircraft engineering division, Region II, Civil Aeronautics Administration.

The afternoon will be used for the annual demonstration of aircraft and equipment designed for and used by aerial applicators. This demonstra-

tion will be held on the college-owned and-operated Easterwood Airport.

Sponsors of the annual conference and short course are the Texas A&M College System, the Texas Aeronautics Commission, the Texas Flying Farmers and Ranchers Assn., and the Texas Aerial Applicators Assn.

NEW BUILDING

COLUMBUS, OHIO—Ground was broken recently for a new \$1.7 million chemical engineering building at Ohio State University.

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SOIL PHYSICS—Third Edition (1956)

Dr. L. D. Baver, Director Experiment Station, Hawaiian Sugar Planters Association

This represents a considerable revision of the earlier versions and incorporates many ideas communicated to the author by soil scientists all over the world. Two new chapters on the principles of soil irrigation and drainage, discussion on soil puddling, effect of chemical soil conditions on soil structure, and recent contributions of the diffusion process in soil aeration, and information on hydraulic conductivity, soil moisture stress and plant growth, the importance of compaction on soil tillage, and wind erosion processes. 487 pages **\$7.75**

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IRRIGATED SOILS: Their Fertility and Management—New 1954—Second Edition

D. W. Thorne and H. B. Peterson, Department of Agronomy, Utah State Agricultural College. Dr. Thorne is also Chief of Soils and Fertilizer Research Branch, Tennessee Valley Authority

An outstanding text dealing with the problems of irrigated regions. In addition to the chapters dealing with irrigation, the salt problem, reclamation of saline and alkali soils, there are chapters on maintaining organic matter in soil, minerals and plant growth, fertilizer elements and fertilizer materials, using fertilizers, soil management for general field crops, for fruit, vegetable and specialty crops... **\$6.75**

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W. B. Andrews

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CHEMICALS, HUMUS AND THE SOIL

Donald P. Hopkins

The theme of the book is the necessity of chemical fertilizers to maintain the fertility of the soil. It has concise information on which soil conditions and which chemical fertilizers are most suited for special crops and vegetables. Space is devoted to cereal crops, barley, wheat, oats and rye; to roots and tubers, sugar beets, potatoes, carrots, parsnips and turnips; to vegetable crops, beans, peas, alfalfa, lupines; to grasses and clovers; to onions, flax, kale, cabbages, lettuce, tomatoes, celery, cauliflower and fruits. It clarifies the relationship of manures, compost and chemicals as fertilizers and points out how chemicals should be used to obtain the best results. Its philosophical soundness and logic should do much to avert the confusion of thought introduced by the advocates of compost and manure as against the use of chemical fertilizers..... **\$8.50**

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VIEWPOINT . . .

"Balanced" Plant Nutrients Contain More Than Nitrogen, Phosphate and Potassium

By Dr. Vincent Sauchelli

Chemical Technologist
National Plant Food Institute
Washington, D.C.

"Balanced fertilizer" is a commonly used phrase in the fertilizer trade and frequently in scientific circles. It has the force of a convention representing an acceptable fact. What does it mean, factually? To me it seems hackneyed like so many other phrases which have acquired popularity and acceptable usage even where they are not suitable to the context. Each of us has a certain mental picture of "balance." When a person applies the word to a certain kind of fertilizer compound it is what Fowler, in *Modern English Usage*, calls a "slipshod extension." Let us inquire how the phrase originated.

The modern fertilizer industry is based on the chemical investigations of von Liebig in Germany and John Lawes in England dating about the middle of the last century. Liebig had proved that plants utilized for their nourishment mineral elements from the soil and among these phosphorus and potassium were of major importance. In the early years of the industry, mixed fertilizers were compounded chiefly from superphosphate and organic materials.

When potash salts from German deposits became commercially available the manufacturers added potash to the mixture to furnish the triad of major nutrients, N-P-K. The product became known as a "balanced" fertilizer mixture. Ever since, the industry, particularly in the United States, has continued to produce fertilizers formulated to furnish these major nutrients. Moreover the common trade practice is generally to evaluate any source of raw fertilizer material primarily on the basis of its content of nitrogen, phosphate or potash, or a combination of them.

Until very recently, little consideration has been given to their partner chemical elements, as previously mentioned, even though agronomists may have demonstrated their plant nutritive value. For example, normal superphosphate contains lime and sulfur in the form of calcium sulfate, both known to be essential to plant life. But the trade judges the value of the superphosphate solely on the basis of its available phosphate. Sulfate of ammonia, rich in sulfur content, is sold on its nitrogen content only. This is not only unscientific, it is unrealistic. These partner chemical elements do influence chemical reactions in the soil as well as in the processing of the fertilizer.

Recent studies in Great Britain* and elsewhere draw attention to these potential reactions and compel us to reconsider whether the old concept of "balance" in a fertilizer based merely on its N-P-K content is adequate.

The soil scientist prefers to speak of the ions rather than elements in a compound; cations for basic elements such as calcium, potassium, magnesium, ammonium and sodium, and anions for acidic elements such as phosphorus, sulfur, chlorine. The concept of "ionic balance" in fertilization is finding acceptance by soil chemists and agronomists.

It is known now for instance that sodium can replace potassium to an appreciable extent in plant nutrition; that the lime in basic slag or cyanamid may play an essential role in soils deficient in it.

Furthermore, agronomists now recognize that the favorable results of field and plot tests could have been attributed to the calcium sulfate of normal superphosphate with as much justice as giving all the credit to the phosphate. These ignored partners can and do have also physical effects on the soil. Sodium, silicon and calcium definitely do this.

This leads us to question the attitude that the application of lime to the soil is something different essentially from fertilizing with say ammonium nitrate or an N-P-K mixed fertilizer or superphosphate. How can one separate the effects of the calcium cation present in superphosphate or cyanamid from calcium in burnt lime or limestone? The agronomists are perhaps at fault in this respect and many of the results of old field and plot tests, reported solely on the basis of N-P-K in the fertilizers while disregarding the cationic or anionic system as a whole, are suspect.

Dr. Nicol, as did Dr. K. A. Bondorff of Denmark before him, stresses the point that we must regard fertilizers as salts capable of producing the sort of chemical and physical effects one expects of salts. "Balance" in fertilizers is not to be measured merely by a certain ratio of N:P₂O₅:K₂O, but rather by a consideration of the effects of the total ionic system. To the pH concept of soil reaction must be added to pC or electrical conductivity concept: fertilizers therefore are to be looked on not merely as sources of certain plant nutrients; liming is not something that changes only the pH of the soil or exchangeable base.

Fertilizers cause alterations in the interdependence between ions and colloids of soil, plant and fertilizer salts, and the agronomist needs to study such alterations as a whole if he is to reach sound conclusions. The ratio of pH to pC is suggested as one means of helping to judge fertilizer balance from the ionic situations which develop in the soil and confront the plant. The problem is rather complex, but it serves no good purpose to oversimplify.

More Rodenticide Sales As Rat Population Grows

An better market for rodenticides is seen in government reports that the rat population is on the increase in many parts of the country.

In the Middlewest, the rats probably never had it so good with huge quantities of late-harvest, wet, and unprotected corn for them to use for feed. As their numbers increase, the losses involved are compounded. Since one pair of rats at large in a granary or warehouse will eat something like 27 lb. of corn during the cold winter months, and will produce in a year up to 70 offspring, one can see how the economic loss digs deeper and deeper into a farmer's pocketbook.

In addition to the amount of grain actually eaten by the rodents, loss from contamination is equally great. Their droppings, calculated at from 1-2 lb. per rat over a period of 6 months during fall and wintertime when they are largely living indoors, are a real contamination problem.

Rodenticides presently on the market can go a long way in reducing the rat population down to the point where there is little loss. And the optimum time to press the attack against rats is during the time they are confined indoors and are far more susceptible to the action of rodenticides.



Croplife's Home Office

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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

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DONALD NETH

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WASHINGTON CORRESPONDENT—John Cipperly, 604 Hibbs Bldg., Washington, D.C. (Tel. Republic 7-8534).

EXECUTIVE AND EDITORIAL OFFICES—2501 Wayzata Blvd., Minneapolis, Minn. Tel. Franklin 4-5200. Bell System Teletype Service at Minneapolis (MP 179), Kansas City (KC 295), Chicago (CG 340), New York (NY 1-2452), Washington, D.C. (WA 82).

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*Ionic Balance in Fertilizing. Hugh Nicol, Fert. & Feeding Staffs Journal, 12/4/57.

MEETING MEMOS

Feb. 10-13—Maryland Agricultural Pesticide Conferences, Episcopal Parish Hall, LaPlata, Feb. 10; American Legion Home, Cambridge, Feb. 11; Francis Scott Key Hotel, Frederick, Feb. 13.

Feb. 11-14—Tennessee Fertilizer-Seed Meetings; Noel Hotel, Nashville, Feb. 11; City Hall, Jackson, Feb. 12; Community Hall, Tennessee Wesleyan College, Athens, Feb. 13; Asbury Church, Greeneville, Feb. 14.

Feb. 25-27—Agricultural Chemicals Conference, Texas Technological College, Lubbock, Texas.

March 10—Fertilizer Dealers' Day, Chehalis, Wash., sponsored by the Pacific Northwest Plant Food Assn. in cooperation with Washington State College.

March 20-21—Pest Control Operators Conference, Michigan State University, East Lansing, Mich.

April 30—Manufacturing Chemists' Assn. Precautionary Labeling Conference, Shamrock Hotel, Houston, Texas.

Nov. 9-11—California Fertilizer Assn., 35th Annual Convention, Ambassador Hotel, Los Angeles, Sidney H. Bierly, 475 Huntington Drive, San Marino 9, Cal., General Manager.

Jan. 20-22, 1959—California Weed Conference, Santa Barbara, Cal.

EDITOR'S NOTE: The listings above are appearing in the Meeting Memos for the first time this week.

Feb. 16-18—Seventh Annual Texas Agricultural Aviation Conference and Short Course on Pest Control, Texas A&M College, College Station, Texas.

Feb. 11-12—Third annual Montana Fertilizer Dealer School, Montana State College, Bozeman.

Feb. 12-13—Shell Chemical Corp. Nematology Workshop, Hotel Stardust, Yuma, Ariz.

Feb. 13-14—Agronomists-Industry Joint Meeting, Edgewater Beach Hotel, Chicago, sponsored by the Middle West Soil Improvement Committee, Z. H. Beers, 228 N. LaSalle St., Chicago 1, Ill., Executive Secretary.

Feb. 19-20—Midwestern Chapter, National Shade Tree Conference, 13th Annual Meeting, LaSalle Hotel, Chicago, Noel B. Wysong, 536 N. Harlem Ave., River Forest, Ill., Secretary.

Feb. 20-21—Shell Chemical Corp. Nematology Workshop, Holiday Inn Motel, Toledo, Ohio.

Feb. 20-22—Nitrogen Conference, University of Minnesota, St. Paul, M. W. Mawhinney, Smith-Douglas Co., Albert Lea, Minn., Chairman.

Feb. 25-26—Seventh Annual South

Carolina Pesticide Chemicals School, Clemson House, Clemson College.

Feb. 26-27—Seventh Annual Ohio-Indiana Agricultural Aviation Conference, Ohio State University, Columbus, Ohio.

March 4-5—Western Cotton Production Conference, Hotel Cortez, El Paso, Texas, Conference Sponsored by the National Cotton Council and the Five State Cotton Growers Assn.

March 13-14—Oregon Feed & Seed Dealers Assn., Annual Convention, Multnomah Hotel, Portland, Ore.

March 18-19—South Dakota Weed & Pest Control Conference, City Auditorium, Miller, S.D.

March 18-20—Western Weed Conference, Hotel Davenport, Spokane, Wash.

April 13-15—Sixth Annual California Fertilizer Conference, California State Polytechnic College, San Luis Obispo, Sidney H. Bierly, 475 Huntington Drive, San Marino 9, Cal., General Manager.

April 17-19—California Hay, Grain & Feed Dealers Assn. Annual Convention, Ambassador Hotel, Los Angeles.

April 22—Western Agricultural Chemicals Assn., Spring Meeting, Hotel Biltmore, Los Angeles; C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., executive secretary.

May 22-23—Soil Science Society of North Carolina, First Annual Meeting, Williams Hall, North Carolina State College, Raleigh, N.C.

June 9-11—Association of Southern Feed & Fertilizer Control Officials, Heart of Atlanta Motel, Atlanta, Ga., Bruce Poundstone, University of Kentucky, Lexington, Ky., Secretary-Treasurer.

June 15-18—National Plant Food Institute, Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 25-27—Pacific Branch, Entomological Society of America, San Diego, Cal.

July 8-10—Pacific Northwest Plant Food Assn., Ninth Annual Regional Fertilizer Conference, Pocatello, Idaho.

July 18-19—Southwest Fertilizer Conference and Grade Hearing, Buccaneer Hotel, Galveston, Texas.

Oct. 22-24—Pacific Northwest Plant Food Assn., Annual Meeting, Gearhart, Ore., Leon S. Jackson, P.O. Box 4623, Sellwood-Moreland Station, Portland, Ore., secretary.

Oct. 28-29—Northwest Garden Supply Trade Show, Masonic Temple, Portland, Ore.

Oct. 29-31—National Agricultural Chemicals Assn., 25th annual meeting, Bon Air Hotel, Augusta, Ga.

War Begins on Fire Ant In Southeastern Texas

COLLEGE STATION, TEXAS—Texas' first organized effort to eradicate the imported fire ant has begun in Hardin County, one of six southeast Texas counties invaded by the ant.

The control program was mapped by a committee composed of landowners and representatives of the Texas agricultural extension service, the State Department of Agriculture and the plant pest control branch of the U.S. Department of Agriculture.

"An area of about 200,000 acres in Hardin County is infested, but not nearly that many acres need treatment," Dr. Freeman Fuller, extension service entomologist, said. "Some of the acreage included is woodland which the ant does not infest except where openings allow sunlight on the ground."

Cost of control will average about \$5 per acre for application of recommended insecticides, Dr. Fuller added. Application can be made by airplane or ground equipment. In an organized effort such as in Hardin County, the pest control branch will pay approximately 50% of the total cost.

Jerry A. E. Knopf Named to Calspray Post

RICHMOND, CAL.—The selection of Jerry A. E. Knopf as a sales representative for the California Spray-Chemical Corp. was recently announced by Gordon G. Black, district manager for the Southern California area, with offices in Whittier, Cal. Mr. Knopf will work out of the Calspray office in Blythe, Cal. California Spray-Chemical Corp. is the manufacturer of the Ortho line of insecticides, fungicides, weed killers and fertilizers.

Prior to his recent selection to Calspray's Southern California sales force, Mr. Knopf was a graduate research assistant at Colorado State University. He also received his M.S. degree in entomology from that institution.

The selection of Ellis C. Anderson to fill the position of designer in Calspray's engineering department also was announced by P. S. Williams, chief engineer. Mr. Anderson will be employed at Calspray's home office in Richmond.

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of \$11 per column inch.

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Corn Crop Rated No. 1 in Georgia's 1957 Report

ATHENS, GA.—The number one crop in Georgia in terms of dollar valuation is corn, says J. R. Johnson, agronomist-project leader, agricultural extension service, University of Georgia College of Agriculture. He said figures reported by the Crop Reporting Service show Georgia's corn yield is at an all time high. The 2,738,000 acres in the 1957 crop produced 71,188,000 bushels. The crop is evaluated at \$88,985,000. Mr. Johnson said factors contributing to Georgia's growing corn yield are good land selection, adequate fertilization, thick spacing and weed control.

The agronomist said corn is followed by cotton, peanuts, and then tobacco as to value.

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FEBRUARY	MARCH	APRIL	MAY
S M T W T F S	S M T W T F S	S M T W T F S	S M T W T F S
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OCTOBER	NOVEMBER	DECEMBER	JANUARY
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	30		

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- Keeping all segments informed of all industry news.
- Providing feature material designed to help manufacturers and mixers to do a better job, to help dealers sell and to help farm advisors and educational people make sound recommendations.
- Keeping all industry alert to current and proposed government action.
- Providing a channel through which news and advertising can reach all segments of the industry.

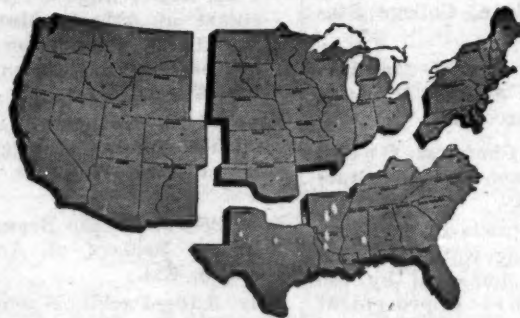
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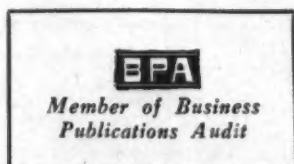
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